THE ROLE OF NARRATIVES IN THE HUMAN RELATIONSHIP TO THE NATURAL WORLD

by

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ABSTRACT

Stories and narratives have an important role in the development of human relationships, particularly in the development of our relationships to the natural world. The types of story told about the nonhuman world can greatly influence the ways in which humans interact with that world. All too often, those stories have encouraged the creation of a divide between and within the human and nonhuman worlds, a divide that then permits humans to mistreat and degrade various communities in both the nonhuman and human worlds. This work explores the stories that have been and are told about a particular place, the pinyon-juniper ecosystem of the American Southwest. By exploring three particular narratives related to that place—the scientifically founded story, the culturally based story, and the resource-driven story—and the corresponding actions that have derived from those stories, we might be able to better understand how the stories we tell affect our relationship to the nonhuman world and so work to create new, more responsible stories and actions. This project concludes with a suggestion for just such a new story regarding the human relationship to the natural world, a narrative based on mutuality, interconnectedness, and the searching out of those points where the human and the nonhuman worlds meet and become melted together.

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CHAPTER ONE

INTRODUCTION

The human ability to narrate, to tell stories, is one of the characteristics that distinguishes us from likely all other life on Earth. We tell stories to entertain and to remember, to understand and to explain. Stories have immense power. They are used to explain what is not understood, to persuade the skeptical, and to manipulate human behavior. Traditional and indigenous cultures around the world and across time, from the ancient Greeks to modern tribes, have told myths and legends in order to make sense of the often murky and more often frightening world around them. Religious leaders and institutions have used parables to call followers and to encourage moral behavior. Fables, fairy tales, and folk stories work to promote specific human actions, beliefs, and values. In many ways, human actions and relationships can be determined by the traditions, manners, customs, beliefs, and values of a particular culture of a certain time and place that are perpetuated or expanded—passed down through generations or shared with other peoples—through narratives.

Sometimes, our stories have revolved around the struggle to comprehend the world around us and to determine the human place or role in that world. The human-nature relationship is not immune to the power and influence of story. Different stories have led to different human-nature relationships, and so to different human action and

behavior. Neither narratives nor cultures, of course, are stagnant and, over time, the two transform alongside and in reaction to each other.

Early humans told stories for survival and persistence: eat the rabbit, don't eat the little brown mushrooms, don't pester the mother bear. As humans learned to mitigate the dangers of their surroundings, the narratives gradually changed from those designed to aid human survival in the nonhuman world to those advocating and perpetuating dominance of that world, with a whole range of other stories found in between. Each of these stories reflects a different worldview about how humans *should* act in relation to the nonhuman world. Each focuses on or highlights a different aspect of the natural world—its sacredness or its secularity, its harshness or its abundance, its beauty or its dangers. All are drastically different stories that have radically affected how humans of different times and places have perceived their relationships to the nonhuman world.

The narratives that humans have told regarding these relationships with the nonhuman world too often have created a divide between humans and nature, a split that encourages humans to view ourselves as separate and apart from the Earth and its other inhabitants. Historic and contemporary ecological destruction may be in part linked to the prevalence of this narrative, a narrative that labels humans as distinct from "nature," rather than a story that reveals and glorifies humanity's dependence on and participation in the "natural world." Such an approach has fostered two utterly incompatible beliefs regarding humans and the natural world. On the one hand, humans view themselves as superior to all else, and so all that is nonhuman becomes that to be conquered, dominated, or used. In contrast, others may view the pure and "natural" nonhuman world as the ideal, see humans as intruders and perverters, and so believe that the most responsible human

action is to remove ourselves and our influences from as much of the natural world as possible.

Neither of these views, humans as rightful conqueror or humans as polluting trespasser, are attractive or sustainable. They are too polemical, and the actions they imply or demand—complete destruction or complete withdrawal—are neither appealing nor practical. There are good and beneficial aspects of these and the many other stories told about the human-nature relationship. But there are equally negative aspects and consequences as well. Instead of these divisive stories, human culture must create a new narrative that invites a different sort of human-nature relationship, a story that reveals the good, for humans and nonhumans alike, that might arise from that relation.

The pinyon-juniper ecosystem of the American Southwest, and the pinenuts that they provide, offer one example of how the human-nature narrative has been told and also how it might be retold. Numerous stories have been told about the ecosystem and its features. Some have explicitly placed humans within the natural world and so have resulted in relative harmony between humans and nonhumans. Others have chiseled a deep divide between humans and "nature" and so have resulted in great ecological damage. By examining some of these stories and the ways that they have been told, we can begin to recognize some of the possibilities for a readjustment in our narratives, changes that may help us to avoid the continuation of environmental and cultural destruction in the future. The pinyon-juniper ecosystem can offer an example of a story that reunites the human and the nonhuman worlds, to the mutual benefit of both.

The stories that have been told about the pinyon-juniper ecosystem throughout history, however, have been far from perfect, and many have illustrated just those

categorical divisions between the human and the nonhuman described above. Many, too, have resulted in great degradation, suppression, and exploitation of various communities within the nonhuman and human worlds alike. Before describing the potential new narrative that a place like the pinyon-juniper ecosystem might inspire, then, it is necessary to examine the stories that already exist, so that we might learn from those stories and avoid their pitfalls and dangers. The chapters that follow explore three narratives of the pinyon-juniper ecosystem: the scientifically founded story, the culturally based story, and the resource-driven story. Exploring each of these might help us to better understand the ways in which the stories we tell about a place influence the way we treat that place. Our human narratives reveal a great deal "about how we perceive the world, society and ourselves, what we believe our relationship should be with other people and with the world around us" (Rajotte 7). Reviewing the stories we have told over time offers the opportunity for self-reflexivity and growth, as individuals and as a more general society, so that the next story we tell might be one that encourages humans to rethink our place and role in the larger world surrounding us and to become responsible, sustainable, and respectful members of that community.

CHAPTER TWO

THE SCIENTIFIC STORY

Introduction

Science and the stories it tells are often, and not always wrongly, viewed as the most objective and correct of all stories told. They are, or, at least, are said to be, stories supported by data, evidence, and facts, and stories undiluted by emotion or sentiment. Because science is such a widely accepted and seemingly fool-proof story, it has the ability to affect drastically the manners in which humans interact with the nonhuman world.

Science is valuable, and its stories of the pinyon-juniper ecosystem have provided humans with much knowledge of the region: its prehistory and history, its biology and ecology. Science has taught us how pinyon pines arrived in and adapted to the American Southwest. It has helped to reveal the tree's lifecycle, what it depends on for its survival needs, and what depends on it. The value of science lies in the information it can provide, and science has in some ways allowed humans to understand and dissect the intricacies of the pinyon-juniper ecosystem and the resources it provides to a degree not otherwise possible. What follows is an exploration of the knowledge of pinyon-juniper ecosystems that science has provided, quite a brief examination considering the incredibly expansive investigations that have been conducted. Though these stories have their own

shortcomings, as will be explored at the end of this chapter, they nonetheless provide an important baseline of information for any study of pinyon-juniper ecosystems.

Pinyon Pines: Scientific Information and Natural History

Prehistory: Arrival in North America

Robert M. Lanner has written extensively on pinyon pines and other trees of the Great Basin region. He explains that pine trees first appeared in northern Asia approximately 180 million years ago (*Piñon* 12). The dynamic changes occurring on the Earth over the millions of years that followed included the presence of land bridges that connected northern Asia to North America from the Upper Cretaceous period (between 100 and 65 million years ago) until the Pleistocene (1.8 million years ago), bridges that allowed for the migration of pines from Asia to North America. The movement of the trees then followed two general directions: eastward toward Greenland and southward along the western shore of the Cretaceous Epeiric Sea, which once divided North America from the Yukon to Texas, and all the way to Nicaragua (Lanner, *Piñon* 13; Mirov 37). As the central mountains of North America rose, the climate generally cooled, and precipitation in the western half of the continent decreased, the forests of the eastern and western halves of the United States took on drastically different characteristics; the presences of pines, however, remained one unifying feature.

Early Evolution

As pines expanded south into Mexico, the unique climates and terrains they encountered acted as catalysts for a bursting forth of new pine species, causing the region

to be considered by scientists a secondary evolutionary center for the genus (Lanner, *Piñon* 13; Mirov 37). As individual organisms encounter changing climatic features, new species develop in response, and it is extreme variables that often have the most dramatic effect on such speciation (Tausch 12). Even within similar or stable climactic regions, local variations in topographical features and soil properties can have a strong influence on the evolution of individual species and the makeup of larger plant communities (Jacobs 15). The diverse landscapes, geographies, and temperatures of Mexico provided the new arrivals with just such variability, encouraging a sudden explosion of new species.

Several of Mexico's unique pine species are isolates in incredibly specific and small geographical locales, distribution patterns that Lanner cites as further evidence of western North American pines being relatively newly developed species still working to expand their range (*Piñon* 14). Modern examples of such extreme isolates in Mexico include the Potosí piñon found only on the upper reaches of Cerro Potosí, a mountain in the Mexican state of Nuevo León, and on a few ridges further south; the Martínez piñon, which has been documented only in a remote canyon in the state of Zacatecas; and the Johannis piñon, located only on limestone mountains to the west of the city of Concepción del Oro, also in Zacatecas. The uniqueness of these species is highlighted, as well, in their unusual characteristics. The Martínez piñon, for example, produces a cone that can reach ten inches long and weigh four pounds when green (Lanner, *Piñon* 7–8).

Early Distribution, Adaptation, and Range Expansion

Around sixty million years ago, North America experienced an increase in temperatures and a decrease in precipitation. The eruption of the Sierra Nevada and Cascade mountain ranges further decreased the amount of moisture reaching the western half of the continent. This drought, which lasted thirty million years, caused wide-ranging extinctions of plants with high moisture requirements and ignited the evolution of drought-hardy varieties. Among these drought-tolerant species were the pines that would eventually give rise to the modern pinyon. Fast-growing pines that thrived in the previously tropical temperate climate gave way to those better suited to surviving the semi-arid conditions developing in the southern United States and northern Mexico. Pinyons became stouter and slower growing, and their water requirements decreased. The new species then began to migrate back up the North American continent, expanding and contracting their range in relation to the climactic fluctuations of the region (Lanner, *Piñon* 14–15). The Great Basin is a transitional zone between northern coniferous forests and southern deserts, and so its vegetative communities experienced distribution shifts of hundreds of miles both north and south during glacial cycles, as well as corresponding alterations in abundance and dominance of particular species (Tausch 12).

Between 40,000 and 11,000 years ago, pinyons were widespread on lands with elevations below 1,700 meters in the Mojave, Sonoran, and Chihuahuan deserts (Betancourt et al. 1692). The high altitudes and colder temperatures of regions to the north limited expansion in that direction. Desert packrat middens—highly valuable sources of macrofossil material described as "accidental archive[s] of the flora and fauna of [a rat's] neighborhood" (Lanner, *Piñon* 30)—have shown that pinyons went locally

extinct in the Chihuahuan Desert around 11,000 years ago during the most recent deglaciation. The species subsequently migrated to higher elevations and more northerly latitudes during the Holocene period that followed (Allen n.p.). After the deglaciation and migrations, new species became dominant, primarily *Pinus edulis* and *Pinus monophylla*, the most widespread pinyon species of the American Southwest today (Betancourt et al. 1692). Such migrations have continued into the present (Betancourt 136), with some evidence suggesting the establishment of a new range of one pinyon species as recently as several hundred years ago (Betancourt et al. 1692; Allen n.p.).

As the species extended their range northward, they were forced to adapt to the increasingly cold temperatures of northern mountain ranges. In temperate regions, new growth on trees was stimulated by the presence of sufficient moisture, regardless of temperature. In the north, unusually late fall rains could spell doom for trees with similar characteristics: new growth kindled by such rain would easily be destroyed by a frost, stunting and potentially killing the tree. Instead, northern pinyons evolved in such a way that their new growth was stimulated by rising temperatures, rather than increased moisture, in order to ensure that new shoots were sufficiently developed by the time of the autumn frosts. The increased water that was available from snowmelt—moisture not available in the temperate southern regions—promised that trees would have sufficient moisture to begin such growth in early spring (Lanner, *Piñon* 16).

Contemporary Distribution

Modern pinyon populations of the American Southwest and Great Basin regions consist primarily of two species: singleleaf pinyon (*Pinus monophylla*) and Colorado

pinyon (*P. edulis*), each with its own unique distribution and characteristics. Though each species of pinyon does form pure stands, they are more often found in association with junipers, an evergreen shrub that produces its own cones in the form of small, blue-green "berries." Pinyon-juniper woodlands constitute one of the most widespread vegetation types of the southwestern region of the United States. Estimates of the extent of pinyon-juniper woodlands in the United States vary depending on the overall area considered, and have ranged from as low 42 million acres to as high as 124 million. Satellite imagery suggests the distribution to be closer to 55.6 million acres in the entirety of the western United States. New Mexico has the greatest area of pinyon-juniper woodlands (12,561,000 acres), followed by Arizona (9,628,000), Utah (9,439,000), Nevada (8,106,000), and Colorado (6,596,000) (Mitchell and Roberts 147). Utah, however, has the highest percentage of its land occupied by pinyon-juniper woodland (28.6 %), followed by New Mexico (26.5), Nevada (18.6), Arizona (17.3), and Colorado (9.0) (Pieper 3). Pinyon-juniper woodlands also exist in California, Idaho, Oregon, Texas, and Wyoming, though on much smaller scales.

What are commonly referred to rather broadly as pinyon-juniper woodlands and ecosystems are actually more complex vegetation associations made up of a number of different pinyon and juniper combinations. Woodlands are simply those areas hosting tree species that tend to be smaller than top-canopy forest species and that do not have overlapping canopies; woodlands also have higher available moisture requirements than grasslands, but lower requirements than true forests (Dick-Peddie 72). Each stretch of pinyon-juniper woodland found throughout the southwestern United States features a unique mixture of available moisture, topography, annual temperatures, and soil

composition, and so specific species of pinyon and juniper—and specific assemblages of those species—have evolved to fulfill the ecological niches provided by each of these locations. Diverse climactic variables also account for the forms that pinyon-juniper communities may take. The most common of these forms are either dense, tree-dominated woodlands that restrict understory vegetation growth or more open savannas in which stretches of shrubs, grasses, and forbs are interrupted by an occasional tree or small stand of trees.

As mentioned before, singleleaf and Colorado pinyons account for the vast majority of pinyon species in the American Southwest. Juniper species include Utah (*Juniperus osteosperma*), oneseed (*J. monosperma*), Rocky Mountain (*J. scopulorum*), alligator (*J. deppeana*), and western (*J. occidentalis*) (Jacobs 12). Utah juniper is the most common associate of both singleleaf and Colorado pinyon in these regions (West, "Distribution" 21). These pinyon-juniper communities can be classified according to the dominant vegetation types at multiple layers, including overstory tree species, understory plant species, and ground cover species. A classification, then, could be as simple as pinyon-juniper mixed woodlands, or as complex as a Colorado pinyon, Utah juniper, black sagebrush, western wheatgrass plant community (Thompson 12–13). The dominance of pinyon over juniper and vice versa is primarily dependent on elevation. Pinyons typically are more dominant at higher elevations, and junipers more so at lower elevations. Junipers, however, are more widely tolerant of drought and cold and so have a broader general range than do pinyons (West, "Juniper-Piñon" 288).

Singleleaf and Colorado pinyon species have been known to hybridize in several locations where their ranges run into each other, most notably along the eastern edge of

the Great Basin, within the canyon country of southern Utah, and south of the Mogollon Rim. In such locations, hybrid pines are capable of breeding both with their parent species and each other, resulting in stands of "hybrid swarms" that exhibit characteristics of both singleleaf and Colorado pinyons, making them difficult to classify by sight (Lanner, *Piñon* 26–27; Jacobs 13).

Pinyon-Juniper Succession and Fire

The succession of vegetation communities in the American Southwest follows patterns found in most plant communities across the continent: following disturbances, annual plants initially dominant and then give way to perennial grasses and forbs, which lead to shrubby plants and, finally, woodlands or forests. Such succession stages should not be examined solely from the "climax" view, in which an ecosystem is assumed to be always moving toward a stable, climactic state. Instead, it should be recognized that individual sites develop their own successional pathways depending on the complex combination of environmental, climactic, and other forces acting upon it. A climax stage should be understood simply as a "state of relatively stable composition that develops in the absence of major disturbance" (West and Van Pelt 46).

It is generally accepted that the abundance of grasses, forbs, and shrubs decreases as tree cover increases, probably due to both to an increase in shading by canopy covers and a decrease in moisture available to nontree plants. The steps or phases of transition from savanna-like ecosystem to tree-dominant woodland can be described in a number of overlapping stages: Phase 1, in which trees are present but in which shrubs and grasses are the dominant vegetation and the central influence on an area's ecological processes,

including hydrologic, nutrient, and energy cycles; Phase 2, in which trees, shrubs, and grasses co-dominate and influence ecological processes equally; and Phase 3, in which trees are dominant and are the primary influence on ecological processes (Tausch, Miller, Roundy, and Chambers 46). Studies have suggested that this transition through successional stages is, however, surprisingly slow. One study used paired photographs to demonstrate no change to the composition of a plant community located in northeast Utah over a twenty-three year period (Austin). Another suggests that the transition from a skeletal forest resulting from a major fire disturbance to full pinyon-juniper woodland could take three hundred years (West and Van Pelt).

Fire has long been a primary disturbance force within the Great Basin and on the Colorado Plateau, and was likely a major factor in the continual presence of open savanna-style pinyon-juniper woodlands in the era before Euro-American settlement of the southwestern region. Though incredible variability has been shown in the frequency and intensity of presettlement fires, they were most frequent on those areas—often canyon bottoms or north-facing slopes—with soils deep or fertile enough to support fine fuels in the form of grasses and shrubs. Rocky, poor, or shallow soils were unable to support the growth of fuels and so fires occurred on those lands less often (Gruel 27). Frequent burnings of grasslands and woodlands inhibited tree growth, as trees less than fifty years old are highly susceptible to being killed by fire. Such low-intensity fires fueled by perennial grasses and shrubs are not sufficient to kill all life, however, enabling resurgence in growth by new annuals following the burning. Frequent, low-intensity presettlement fires are believed to have maintained large expanses of savanna landscapes in which groups of trees or single trees are interspersed within large grasslands (Gruel

27). Fire disturbance may have been such that trees were present on less than one-third of their modern range, and even those stands featured canopy covers one-fourth to one-tenth less dense than those present at the end of the twentieth century (Tausch and Hood 58). It is also likely that there were high degrees of "edge" between communities dominated by sagebrush and those dominated by trees, creating a number of transitional zones that provided suitable habitat for a large number of wildlife species (Tausch and Hood 58).

Old-growth pinyon-juniper woodlands generally display characteristics, both in individual trees and in the larger community, quite different than those woodlands that became established more recently. Individual old-growth trees are more likely to display rounded and nonsymmetrical crowns, twisted trunks or limbs, large lower limbs, or branches covered in lichens. Old-growth communities will demonstrate a mixture of older trees, standing and down dead trees, living trees, cavities, and branches covered in lichens. Most old-growth stands feature a more open growth structure with a variety of understory vegetation. Because of the varied stages of productivity, growth, and decay found in old-growth forests, they typically feature more complex ecological interactions than do younger forests (Miller, Tausch, and Waichler 375–376). Old-growth stands are found primarily in regions that experience infrequent fires or other large-scale disturbances, as the woodlands require several centuries to mature to an old-growth state. The most biologically diverse of old-growth stands are those that experience continual low-intensity disturbances in the form of insect, snow, or disease damage to individual trees (Floyd et al. 27).

The Influence of Euro-American Settlement on Pinyon-Juniper Distribution and Composition

The arrival of Euro-American settlers in the American Southwest had a drastic effect on the composition and distribution of vegetation communities throughout the region. The introduction of heavy livestock grazing near the end of the nineteenth century caused an intense reduction, even a complete removal, of grasses and herbs. The removal of this vegetation not only reduced resource competition for trees, but also reduced the availability of the fine fuels that had permitted the previous periodic fire regimes. The removal of these fuels through heavy grazing, coupled with active fire suppression management techniques, resulted in a significant decrease in fire frequency (Savage and Swetnam; Pieper 7). That decrease further allowed for an increasing dominance of trees that previously would have been killed by fire, as well as for greater coverage by shrubs, which act as nurse plants for tree seedlings (Tausch, West, and Nabi; Tausch and Hood 60). Other factors suggested to have contributed to increasing tree cover include climactic change and increasing levels of atmospheric carbon dioxide (Miller and Tausch 15). In light of these changes, pinyon-juniper woodlands have experienced increased ranges, crown covers, and densities (Laylock 8).

Not all modern pinyon-juniper expansion, however, is the result of woodlands encroaching upon former grasslands or savannas. Historical resource practices resulted in the destruction of great expanses of pinyon-juniper communities, and some of the resurgence of pinyon-juniper woodlands today is the result of earlier communities reestablishing themselves in former territories (Pieper 8). Historical destruction of pinyon-juniper ecosystems, as well as the consequences and implications of Euro-

American influences on pinyon-juniper communities, will be discussed in more depth in later chapters.

Species Biology and Ecology

General Characteristics

Both singleleaf and Colorado pinyons can be found at elevations as low as 4,500 feet and as high as or higher than 8,000 feet, with the majority of the pinyon-juniper mixed woodlands occurring between 5,000 and 6,500 feet, above the desert but below true forests of oak, aspen, or other pines. They persist on dry and rocky terrains characterized by shallow soils and limited moisture availability, as annual precipitation can range from only ten to twenty inches (Elmore 13) (see Figure 2.1). The small sizes of

Figure 2.1. Pinyon-juniper community located in far-western Utah. Photo by the author.

species exhibit incredible adaptability to a wide range of habitat and altitudinal constraints, demonstrating highly diversified genetic variability (Lanner, *Piñon* 23).

Singleleaf Pinyon—Pinus Monophylla

The aptly named singleleaf pinyon is unique within the pine genus in that it boasts only a single needle per fascicle, whereas most other species range from two to five needles per fascicle. Singleleaf pinyons probably evolved from a tree in an ancestral, two-needled Colorado pinyon population. A random genetic mutation caused the tree to suppress the development of one of the two needles in each of its fascicles (Lanner, *Piñon* 19). The short, cylindrical needles are thickly clustered on branches, a grayish-green color, and usually gently curved (see Figure 2.2). The cones are chunky and squat, and each of the thick scales holds two large nuts, actually seeds, that are fastened in place by a thin membrane (Crittenden 41) (see Figure 2.3). Immature cones are green, though they ripen to a deep brown as the seeds mature, and are covered with a very sticky pitch.

Singleleaf trees rarely exceed forty-five feet in height, and they feature initially rounded crowns that flatten with age. The stout trunks branch into heavy boughs that often bend toward the ground. Naturalist John Muir offered a more poetic description of the singleleaf pinyon and its odd shapes when he wrote that "a more contented, fruitful and unaspiring conifer could not be conceived. . . . Without any apparent cause it keeps near the ground, throwing out crooked, divergent branches like an orchard apple-tree" (Muir 94). Slow-growing trees, singleleaf pinyons can live one hundred to two hundred years, or longer. They are highly tolerant of drought and frost, and can survive temperature ranges from -2° to 122° Fahrenheit (Crittenden 41–42). Singleleaf pinyons

Figure 2.2. Singleleaf pinyon needles, exhibiting only one needle per fascicle. Photo by the author.

Figure 2.3. Singleleaf pinyon cone featuring several pine nuts. Note the dual ovule pits located on each scale and the presence of pitch on the tips of scales. Photo by the author.

are found largely in the Great Basin and along the borders of the Mohave Desert, and are most common in Nevada and parts of southern California and western Utah (see Figure 2.4).

Colorado Pinyon—Pinus Edulis

The Colorado pinyon, state tree of New Mexico, is found on the Colorado Plateau in New Mexico, Arizona, western Colorado, and southeastern Utah (see Figure 2.5). It differs from the singleleaf pinyon primarily in that it produces two needles per fascicle. Generally shorter and smaller than the singleleaf, Colorado pinyons also have rounded tops, numerous branches, and generally crooked trunks covered with reddish bark (Elmore 14). The thick needles, which begin a gray-green but take on a yellow-green hue as they age, are stiff, incurving, and can reach one and a half to two inches in length. The dark-brown cones are similar to those produced by singleleaf pinyons, but are slightly smaller, feature fewer scales (Crittenden 40) and may hold only eight to ten seeds total (Lanner, *Trees* 35). The irregularly shaped trees can grow as high as thirty-five feet, but rarely exceed twenty. The scientific epithet of the Colorado pinyon—*edulis*—refers to the edible pine nut, which can provide more than 3,000 calories per pound (Williams 44). Colorado pinyon wood is especially fragrant when burned—the pitch contains a compound also found in Zinfandel grapes—and it produces strong heat and bright light (Lanner, *Trees* 37).

Growth of both Colorado and singleleaf pinyons is exceedingly slow. An experimental plot in northern New Mexico, for example, revealed that over a period of forty-seven years, nineteen individual trees of a Colorado pinyon stand grew in height an

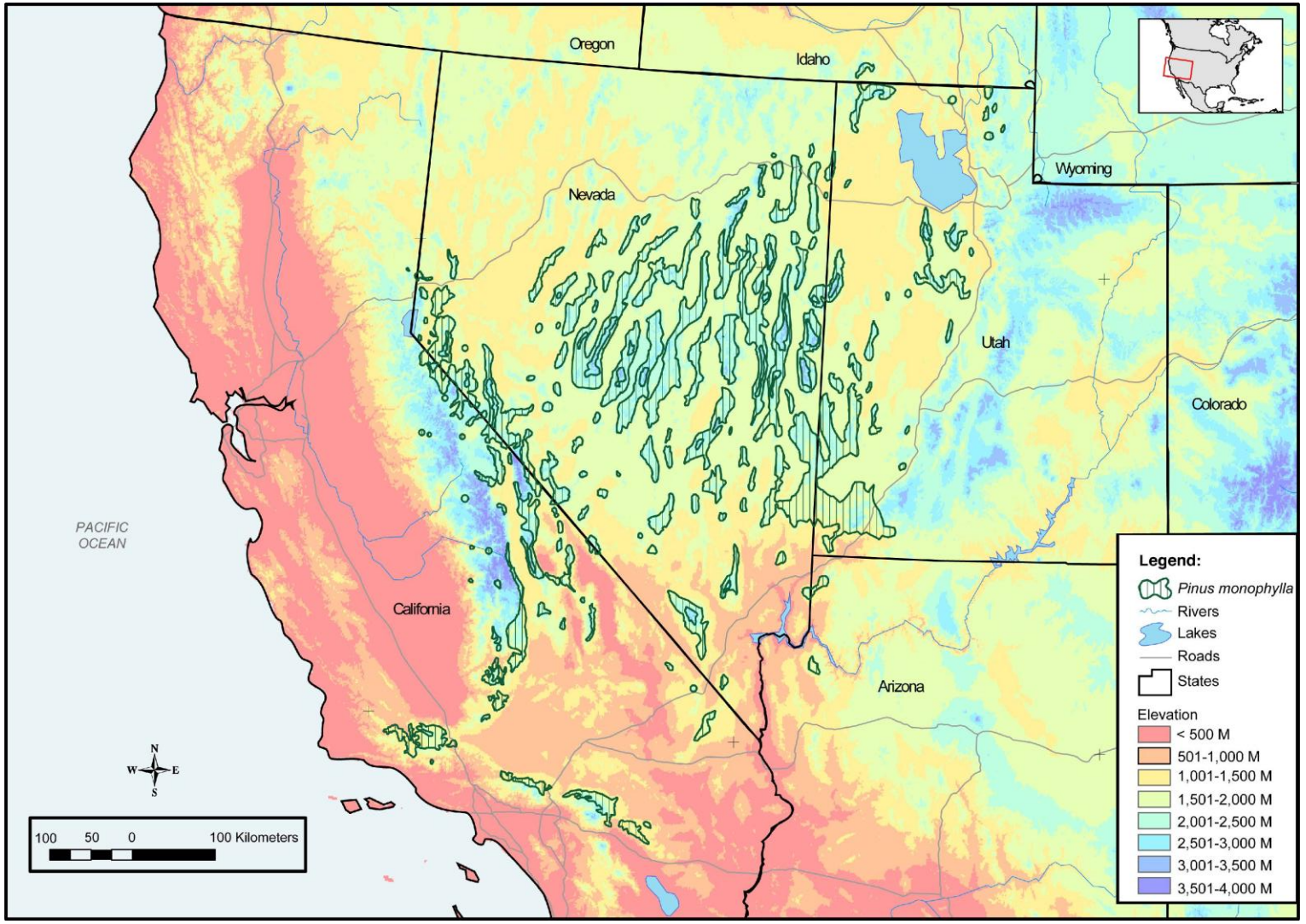

Figure 2.4. Distribution of singleleaf pinyon in the American Southwest. Courtesy U.S. Geological Survey.

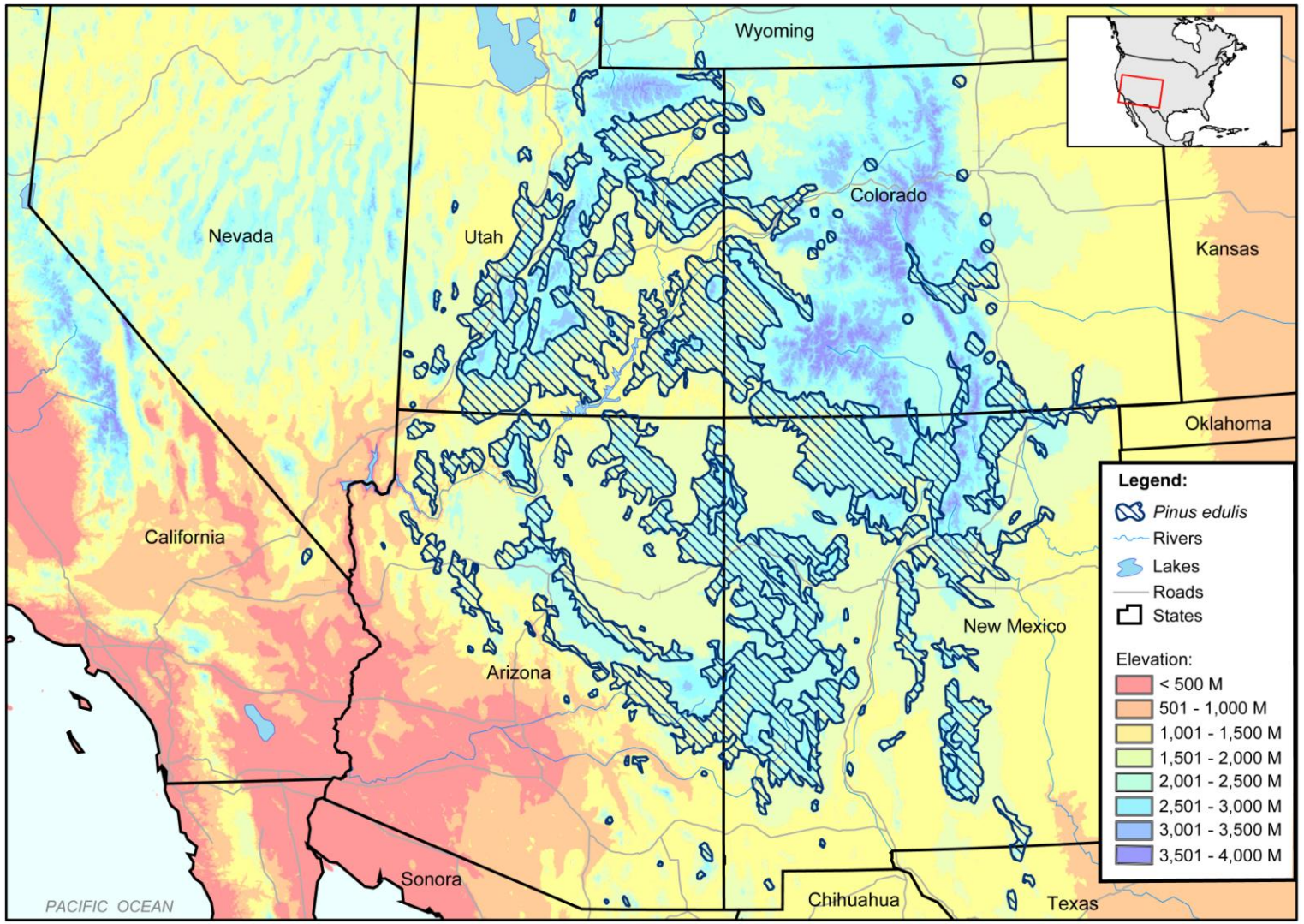

Figure 2.5. Distribution of Colorado pinyon in the American Southwest. Courtesy U.S. Geological Survey.

average of only 1.1 inches per year and increased their crown spread only 1.6 inches per year. It took an outstanding average of 16.8 years for each tree to increase its girth, as measured at a man's chest height, by one inch (Little, "Pinyon Trees" 66).

The Pine Nut

Perhaps the most striking feature of the pinyon pines of the American Southwest is the large, edible seeds that they produce. While all pines produce seeds in their cones, only certain species produce seeds large enough to be eaten by humans. It takes roughly twenty-five years for a pinyon tree to become sufficiently mature to set cones, and it will not achieve peak production until it is between seventy-five and one hundred years old (Schlanger and Larralde 146). The actual production of these nuts by individual trees is equally long and tortuous, as Lanner describes. Pine trees grow by extending buds from existing branches. While the buds are formed during the summer, they remain dormant under a protective covering of scales until the spring following their formation. At this point, it is possible to distinguish under a microscope between buds—which are really miniature branches all clumped together until they are fully formed—that will produce cones and those that will not. Cone-bearing buds are generally found on faster-growing branches.

When spring arrives, the buds elongate and the needles begin to develop as small spikes on each bud. Tiny new conelets will begin to emerge on the bud, barely ¼ inch in diameter, covered in minute spines, and ranging in color from yellow-green to red-purple. Each of the scales of the conelet hosts two ovules—potential seeds. When the conelet is fully formed, it opens its scales in order to capture the pollen produced on male cones of

the same or nearby trees. The scales close, trapping the pollen safely within, and over the remainder of the summer, the cone slowly grows to around ½ inch in diameter (see Figure 2.6). The conelets are particularly fragile at this time, susceptible to frosts that can destroy entire pine nut crops. The cone once again goes dormant over the winter, but becomes active with the arrival of spring and fertilizes the eggs located within its ovules. The still-immature cone continues to grow throughout the summer. By early September, the seeds have fully matured, though the cone remains green, tightly closed, and covered in a very sticky pitch. As autumn progresses, the cone dries, opening its scales and revealing the nuts within (Lanner, *Piñon* 76–77). The cone remains fairly small even in its maturity, a characteristic that John Muir has described as deceiving: the cones

Figure 2.6. Colorado pinyon cones. Mature, empty cone in background. Two female "conelets" and four small, male pollen cones on tip of branch in foreground. Note the two needles per fascicle of this species. Photo by the author.

"seem to have but little space for seeds; but when we come to open them, we find that about half the entire bulk of the cone is made up of sweet, nutritious nuts, nearly as large as hazel-nuts" (Muir 94).

The incredible length of the seed-production process for pinyons—three growing seasons and as many as twenty-six months—limits the number of nut crops that a tree can produce. Pinyons cycle between good and poor crop yields, producing an exceptionally large bumper crop only every three to seven years (see Figures 2.7 and 2.8). While the exact reasons for this masting behavior, seen in other pines as well, is not known, possible explanations include weather cycles or the inability of pinyons to muster enough energy or nutrients to undergo the exhausting process every year (Lanner, *Piñon* 78). Masting strategies thus allow the pinyons to replenish their depleted stores in the

Figure 2.7. Nuts and empty cones from singleleaf pinyon scattered on ground during mast year. Photo by the author.

Figure 2.8. Singleleaf pinyon with heavy crop of nut-bearing cones. Photo by the author.

unproductive years following a mast (San Miguel and Colyer 93). Others have suggested that masting is a defense mechanism against predation: large crops ensure that so many nuts are produced that some will survive being eaten to reach germination. Irregular production cycles prevent animals from adapting to produce their own larger broods to take advantage of the excess availability during mast years, and also guarantee that any populations that do grow exceptionally large because of a mast will suffer a sudden crash in the lean production years following a mast (Williams 44).

Seed Dispersal

The size, weight, and winglessness of pine nuts makes seed dispersal for reproduction a more complex matter for pinyons than for those trees that spread their seeds by wind alone. Despite nut predation by birds, rodents, and humans, bumper crops during mast years ensure that some seeds will reach germination. Because seeds that fall directly from cones, however, land beneath the crowns of the trees, there is little hope that true seedlings will develop. Germinated seeds that land farther from the tree, and even those seeds that experience some protective cover from the parent tree or another plant but that remain atop the ground's surface, are fragile, likely to be killed or crisped by sun, cold, or heat (Lanner, *Piñon* 50–51).

The survival of the delicate seedlings, then, is highly dependent on their being buried. Numerous creatures, including Steller's jays, Clark's nutcrackers, scrub jays, and various rodents, are known to gather and cache pine nuts, and then forget or otherwise leave untouched those caches, effectively planting the seeds of future pinyons. By far, however, the most important of the animals involved in the regeneration of pinyons is

one that has so deeply coevolved with the pinyon pine that the two share names: the pinyon jay.

Dull blue and highly social, pinyon jays can be found throughout pinyon-juniper communities beginning in late August, searching out pine nuts in flocks ranging from fifty to five hundred birds (Balda 528). Though pinyon cones at that time of year are likely still tightly closed, the nuts within have fully matured, and the cones offer little protection from the onslaught of pinyon jays. The jays pluck cones from trees and hammer and pick them open. The birds fill their stretchy esophagus with intact nuts—as many as fifty-six Colorado pinyon nuts have been found in a single bird's esophagus (Balda 528)—before retreating to a nesting area to bury them, storing them for future incubating females and young nestlings. The birds, in fact, often bury pine nuts at the ideal depth for germination, two to four centimeters down (Chambers, Schupp, and Vander Wall 30).

Pinyon pines, dependent on the caching tendencies of the jays for their own successful reproduction, have evolved nuts especially attractive to the birds. The extended period—August through October—during which pinyon jays may gather the large, highly nutritious nuts assures the jays a steady food supply throughout autumn, and into winter and spring if cached. Over the fall, the cone opens its scales skyward, a characteristic unusual in pine species (Chambers, Schupp, and Vander Wall 29), to reveal the seeds more openly to the jays. The lack of wings on the nuts, which inhibits pinyons from spreading their seeds without assistance, as well as the thin membrane that wraps the seeds, guarantee that such exposed seeds will stay in place long enough for efficient harvesting (Lanner, *Piñon* 50). Pinyon jays have demonstrated a remarkable ability to

distinguish between fully formed nuts and those that were aborted and are actually just empty shells. Pine nut shells that are light tan, as opposed to deep brown, generally symbolize an aborted seed, and pinyon jays appear to recognize not only these color differences but also weight discrepancies between full and empty shells (Lanner, *Piñon* 47–48).

The quantity of the seeds gathered and cached by pinyon jays and other birds is staggering. Individual Clark's nutcrackers have been shown to hoard as many as 33,000 Colorado pinyon nuts and 17,900 of the larger singleleaf pinyon nuts in a single good crop year. It is estimated that a flock of 250 pinyon jays could cache 4.5 million Colorado pinyon nuts over five months, with the majority of those seeds individually placed in unique cache locations (Chambers, Schupp, and Vander Wall 30). The likelihood that jays and other birds will cache more nuts than they will eventually require is fairly high, particularly in mast years. One study has shown, for example, that a flock of Clark's nutcrackers cached, during a mast year, between 2.2 and 3.3 times their caloric needs. The many thousands of seeds left uncovered remain in the protective microclimate of their burial spot, increasing the likelihood of germination and successful growth (San Miguel and Colyer 92).

Nutritional Value of Pine Nuts

The nutritional composition of pine nuts varies by species. Measured by weight, protein content can range from 12% to 31–34% and carbohydrate contents from 2.4% to 54%. Pine nuts are good sources of vitamins B_1, B_9 (folate), K, and E, and also of the minerals magnesium, zinc, iron, and phosphorus (Yu and Slavin 286). They are the

highest tree nut source of Vitamin K and Vitamin B_3 (Niacin), and are very rich in monounsaturated and polyunsaturated fatty acids (Sathe et al. 20, 29). Though pine nuts are lower in protein than other tree nuts and though they are an incomplete protein, they nonetheless contain all of the essential amino acids (Sathe et al. 15). High lipid contents—ranging from 23 to 68% by weight (Yu and Slavin 286)—make pine nuts a food incredibly high in calories, one of the reasons they have historically been such an important subsistence foodstuff for indigenous populations of the American Southwest and other regions (Sathe et al. 29). Research is beginning to demonstrate that pine nuts may help to lower cholesterol and the risk of cardiovascular disease (Yu and Slavin 289).

Pinyons and Other Animals

The interdependent relationships of the pinyon jays, other birds, rodents, and pinyon pines—relationships centered on the pine nut—are not the only ecological relationships found in pinyon-juniper ecosystems. Mature pinyon-juniper communities provide important habitat for a variety of nongame wildlife species. Pinyon phloem—the soft tissue located between the tree's dead bark and living internal wood—is eaten by a variety of rodents, most notably the porcupine. Mule deer and cattle both will eat pinyon needles as necessary (Lanner, "Piñons" 43). A certain species of bee uses the pitch of pinyons to build its hive, and some sawfly larvae forcibly squirt the sticky liquid to fend off its own insect predators. Other sawflies pass their larval lives in male pinyon cones, subsisting entirely on pollen (Lanner, *Piñon* 38–39).

Gall midges are small, soft-bodied flies that have coevolved with a variety of pine species, including pinyons. The larvae of the piñon spindle gall midge, once hatched,

crawl into the notch where the two needles of the Colorado pinyon meet in each fascicle. The larvae, through some combination of disturbance and biochemical stimulant, cause the growth of a small swelling—a gall—at the base of the two needles. The galls are hollow, providing the larvae with both food and shelter. The presence of the galls, which does kill the two affected needles, seldom causes any severe damage to the tree as a whole (Lanner, *Piñon* 40). Some species of gall midges have even evolved in such a capacity that they stimulate singleleaf pinyons—which long ago mutated to suppress the growth of one of the two needles usually present in each fascicle—to allow the growth of the second needle, providing the midge larvae with the necessary crotch between two needles that would otherwise not be present and which they require to create their gall (Lanner, *Piñon* 41–43).

Pests, Diseases, and Other Dangers to Pinyon Pines

While many creatures take advantage of the food resources and habitat that pinyon-juniper ecosystems can provide, not all do so in ways as beneficial or harmless as those previously discussed. Pinyon pines are susceptible to a variety of diseases and pest infestations, and increasing stand homogenization, likely a consequence of extended years of fire suppression, has made pinyon-juniper communities increasingly vulnerable to wide scale insect and disease outbreaks (Eager 397). Among the more concerning of these are piñon dwarf mistletoe, black stain root disease, and Ips bark beetles.

Piñon dwarf mistletoe is restricted to pinyon pines, but it acts in much the same way as other mistletoes: it burrows its roots into the sapwood of trees, siphoning off water, nutrients, and carbohydrates to fuel its own growth and reproduction. Piñon dwarf

mistletoe manifests itself as leafless, waxy, brittle, olive-colored shoots that protrude from swollen, infected limbs. Like some other mistletoes, piñon dwarf spreads by forcibly exploding its seeds from fruit capsules to land in the foliage of nearby trees (Lanner 37). The incidence of mistletoe increases with trunk diameter and height, and therefore age, but also appears to be killed by fire, suggesting that the increases in its presence might be correlated to the postsettlement practices of fire suppression (Weber et al. 120).

Black stain root disease is a fungus that causes vascular wilt in coniferous trees. The disease causes a reduced growth in needles and a reduced presence of chlorophyll, preventing the tree from effectively continuing photosynthesis. Death can occur as rapidly as two to three years from infection, in part because the tree is also weakened against attacks by other pathogens or insects. The disease is recognizable by streaks of black or deep brown stains within the sapwood of the tree's roots or root crowns. Because black stain root disease is spread via root-to-root contact, trees are usually infected and killed in groupings. In other pine species, insects have also been shown to serve as vectors of the disease, though this has not yet been demonstrated with pinyon pines (Eager 398).

One of the most concerning of contemporary pinyon pests is the Ips bark beetle. Bark beetles of the genus *Ips* have recently become progressively more concerning in the western United States because of their increased outbreaks and their tendency to attack commercially important timber species. The pinyon Ips, *Ips confuses*, attacks both singleleaf and Colorado pinyons throughout their ranges. In natural conditions, the beetle acts as a recycling and thinning agent, making important contributions to stand structure

and nutrient cycling. As Ips bark beetles reach high local populations, however, they can cause widespread mortality of otherwise healthy trees (Eager 397).

Pinyon Ips chew into potential host trees, causing the tree to release heavy amounts of sap to repel the attack. The beetles coordinate their attacks through pheromone signals, calling large numbers of beetles to individual trees, eventually overwhelming the tree's ability to produce enough sap to repel all of the beetles (Eager 397–98). The beetles carry on their body fungal spores, and as they burrow further into the tree, the spores are released and soon begin to grow into the tree's sapwood, cutting off the tree's vascular system and girdling it. The fungal growth marks the wood of infected trees with distinct blue stains (Eager 398).

After mating in small chambers chewed into the tree's wood, female Ips beetles create further gallery engravings, dispersing twenty-five to forty eggs along the length of the gallery. The larvae hatch quickly, and burrow into the soft phloem tissue beneath a tree's bark. Following pupation, adult beetles emerge to attack new hosts. The rapid reproduction process of Ips beetles can occur from two to five times each year, and are more frequent in warmer climates (Eager 398). Infestations of Ips bark beetles and black stain root disease are often found together, and both seem especially attracted to woodlands already under some form of stress or disturbance (Eager 399).

Examining the Scientific Story

The Fallibility and Corruption of Science

The information provided by the scientific exploration of pinyon-juniper ecosystems is clearly valuable. Such work helps to provide a deeper understanding of the

history and ecology of a place, ideally moving humans towards developing a worldview that more fully recognizes the intricacies and mysteries of the nonhuman world. As we learn more, for example, about the complex reproductive cycles of pinyon pines, perhaps we can modify human action in a way that does not interfere with that reproduction. A more thorough knowledge of the prehistory and paleoecology of pinyon-juniper communities might help us to better understand changes in ecosystem distribution patterns that are happening today.

But science has its limits and its potential dangers. Frequently, science is used to develop or justify various human actions toward the nonhuman world. It was science that determined that suppression of fires was the best way to protect the forests of the United States, including the pinyon-juniper woodlands. Science contradicts itself, as even the descriptions of the pinyon-juniper ecosystem above show. Are modern expanding woodlands encroaching on new lands, or reclaiming traditional locations? Is fire detrimental to the ecosystem, or necessary for it to maintain health and vigor? Do pinyon seedlings require nurse plants to protect them from the sun, or do they need sufficient open space to reduce competition for water and nutrients? Science has answered yes, and no, to all of these questions. Science told us that the Earth is the center of the universe and that it lies on a single flat plane, and science created the telescopes and ships that revealed the falsehoods of those beliefs. Science developed the combustion engines that we now continually redesign, and the nuclear power that we simultaneously praise and curse. Science, despite its aura of infallibility, can be proven wrong. Good science adapts itself and its tenets when need be, and, more importantly, understands that there is always more to be learned.

Like all other knowledge, science can also be manipulated or corrupted. It was science—influenced, quite possibly and often, by deep pockets, economic powers, or poorly understood communal needs—that determined that the best use for stretches of pinyon-juniper ecosystems was cattle-grazing, and so undertook mass destruction and unbalancing of the delicate area. Science will likely have to play a role in the reversal of such actions, too.

The Privileging of Science

Science is often privileged over all other forms of knowledge. Communication scholars have demonstrated that often the only arguments considered legitimate in debates over land management policies are the scientific and technical ones. Emotional, social, political, and spiritual arguments are simply disregarded (Endres 47). Though perhaps, even likely, not intentional, such practices are clearly evident in the ways in which management and care of pinyon-juniper ecosystems have been approached. Over the past thirty-five years, at least seven major symposia have been convened by the USDA Forest Service, state land offices, and various universities to share information about and discuss management techniques of the pinyon-juniper communities of the American Southwest. Of these, only one—"Managing Piñon-Juniper Ecosystems for Sustainability and Social Needs"—includes within its title any reference to social and cultural needs or considerations. The hundreds of presentations found in the proceedings' publications overwhelmingly focus on scientific and technical topics, including ecology, hydrology, resource values, utilization, management implications and techniques, and restoration.

Only the symposium mentioned that incorporated social needs devoted any noticeable time to alternative, traditional, indigenous, or spiritual views regarding pinyon-juniper ecosystems, and even those voices were eventually lost in the surrounding science. In fact, the action plan resulting from that symposium, crafted a few weeks following the proceedings, includes only a brief reference to researching cultural and social values of the ecosystem in its extended list of recommended actions. The dominant recommended actions centered on developing further understanding of ecological relationships and management techniques pertinent to the region, as well as the creation of marketing plans for the pine nuts harvested there. Additionally, the only agencies granted the authority to conduct the research were various universities and government land management agencies. Thus, the dominance of the scientific voice is encouraged and perpetuated, and alternative voices ignored or downplayed, as science reinforces and builds upon science (Aldon and Shaw 168–69).

The failure of those involved with the pinyon-juniper ecosystem to incorporate a wider range of voices and viewpoints outside of the scientific demands immediate correction. The varied cultural histories tied to the woodlands are too deep, and present interest in and concern for the ecosystem too strong, to ignore such a great number of valuable voices in favor of only a select and elite few.

The Coldness of Science

Perhaps the most troubling aspect of the scientific story is not its ignored or forgotten potential for error, its susceptibility to dishonest influences, or even its privileging of one sort of knowledge over another, but rather the very detached

objectivity that is foundational to science and that is so often cited as one of its defining and redeeming qualities. Though science does not necessarily promote the narrative that divides the human and the nonhuman (in fact, ecological science has come specifically to advocate for the incorporation of humans more fully into the natural world), the impartiality and neutrality with which science must operate nevertheless colors the story it tells about the human-nature relationship.

Humans are the observers, the measurers, the learners; nonhuman beings and things are those that are observed and measured. There is little room for interaction, let alone the development of any sort of relationship, between the two, and so the scientific story precludes that which is so fundamental to many other, very different stories of the human-nature worlds: experience and engagement. In the pinyon-juniper story, the ecosystem has too often been valued only by numbers of fence posts or quantity and quality of forage. The shallow earth and sparse water have been seen not as aspects of an ecosystem balanced and crafted over millions of years, but as limits and restraints, inputs and outputs to be adjusted for maximum productivity. The wildlife is viewed only as mechanisms serving either the destruction or continuation of the communities, and the pine nut only as a potential source of revenue. Science offers a way to know these things cerebrally, to grasp the technicalities of ecosystem interactions and interrelationships, and to make those relationships as steady, wide-ranging, and productive as possible.

Thus, the scientific story often slips all too easily into a story founded on anthropogenic instrumentalism, an approach in which a thing is valued based only on the resources, however that term may be defined, it provides for people. Extreme and disastrous consequences of the actions supported by an instrumental view of the

nonhuman world are apparent everywhere: in mountain top removal to reach the coal underneath; in the draining and filling of marshes and swamps to create farmland or building sites; and in the overexploitation of fisheries worldwide, to name only a few practices. Of course, as has been discussed and as these examples demonstrate, the long-term consequences of such instrumentalism—and the science and technology that backs it up and makes its actions possible—often have proven its actions to be misguided, hasty, and far from ideal for human and nonhuman populations alike. Just these sorts of consequences in relation to the pinyon-juniper ecosystem will be explored in detail in the coming chapters.

Again, it must be emphasized that the problems of the scientific story lie not as much in the information that science can offer, but in science's underlying worldview that positions nature as a thing to be studied. Scientific fact may provide knowledge and clarification, but it does not always provide true understanding. Some things, after all, simply defy explanation. Instead of conceding to a system that analyzes the pinyon-juniper ecosystem, and all of the nonhuman world, so abstractly, so coldly, so *scientifically*, why not encourage an approach that views the woodlands as a place of subsistence, shelter, beauty, and wonder, a diverse and abundant environment with which humans have long developed, and may continue to experience, an intricate relationship. Such human contact with the nonhuman world, on a level purposely attached and intimate, enables an understanding and comprehension of the nonhuman world and the human-nature relationship much different but equally as valuable as that which scientific fact and information provide. The dominance of the scientific story is slowly erasing and making irrelevant that perception, as is the incredible amount of material knowledge that

science has made so easily and remotely available. As British writer John Fowles has explained, “We know quite enough facts now; where we are still miserably retarded is in our emotional and aesthetic relationship to wildlife. . . . Nature is a sort of art sans art; and the right human attitude to it ought to be, unashamedly, poetic rather than scientific” (84). Humans must begin to move from the only scientific to the scientific and the poetic, to a place where the technical does not have to be emotionless, and a time when a scientist can write on the pinyon-juniper ecosystem, blending without question knowledge, facts, data, science, fascination, bewilderment, rage, surprise, and joy.

CHAPTER THREE

THE CULTURAL STORY

Introduction

Cultures across time and space have always created stories about themselves and their places in the natural world. Often, the stories relating to the human-nature relationship feature aspects of the natural world that are particularly prevalent in or unique to a region or with which populations have become especially connected. The American Southwest is no exception, and the various cultures that have inhabited and that continue to inhabit the region have created stories and traditions tied to the many distinct natural phenomenon there found, including the pinyon pine and the pine nut.

Pinyon pines are a defining feature of the southwestern United States and northern Mexico, and pine nuts have been highly important touchstones and foodstuffs for a number of local cultures. Narratives, legends, and myths told by historic and modern cultures are in many ways precursors or supplements to the scientific stories that now dominate. Both sets of stories are told for a similar reason: to explain the surrounding world and its inhabitants. Cultures that have told and continue to tell these stories include past and present indigenous populations of America and Mexico, as well as historic and contemporary Mexicans, Hispano-Americans, and Euro-Americans. Though each of these populations have provided myriad stories regarding their culture's interactions with

the pinyon-juniper ecosystem, it is likely that no collection of stories is as extensive, explored, and exploited as that of the American Indians. For this reason, and for the sake of brevity, this chapter will be focused on that general population.

Perhaps it is already clear the dangerous territory into which anyone attempting to discuss another culture's stories, worldviews, and beliefs must enter. Focusing on a collective American Indian story is itself problematic, as there is no ultimate American Indian story but rather many, many versions as varied as American Indian populations themselves. I do not pretend here to present a comprehensive account of those stories, or to speak on behalf of those peoples whose stories I do recount. My aim is not to discover the "meaning" or "purpose" of another's story, or to propose what that story implies about another's relationship with the natural world. Rather, I wish to explore the stories that one (dominant) culture might tell about another (dominated) culture, and what those particular stories reveal about the relationship between the two cultures and peoples. Thus, unlike the previous chapter, this chapter will focus on both the human-nature and the human-human relationships that can be built around natural objects.

Though the examples of problematic stories told by a dominant, Euro-American population about dominated American Indian populations and their relationships to the natural world abound, throughout this chapter, I will be focusing on one particular story as a sort of case study. This story, told by the White owner of a trading post located near the Navajo reservation of the Four Corners region of the southwestern United States, provides opportunity to explore and critique some of the ways in which one culture speaks of another and the often unintentional but nonetheless damaging results that can stem from those one-sided conversations.

Prehistoric and Historic Uses of Pinyon Pines

Some background information on the cultural importance of the pinyon-juniper ecosystem and pine nuts to American Indians is appropriate for the coming analysis. Some of the information relayed here is provided by American Indians, some is not, but it is all helpful in establishing the context in which Euro-American stories about American Indians and the pinyon-juniper ecosystem have been and are told.

Pine Nuts and Human Consumption

It would be difficult to dispute that the likely greatest contribution of the pinyon-juniper ecosystem to the survival of historic populations—American Indian and non-Indian alike—is the pine nut. The immense nutritional value of the nut has already been discussed, as has the masting behavior of pines that produce extremely large but inconsistent crops of nuts. Though such inconsistency in crop yields seems a hindrance to subsistence use, as Lanner describes, there was a high likelihood that a family or band would be able to scout future harvests each year, locating, somewhere, a population of pinyon pines producing crops sufficient to ensure a steady food supply throughout the winter months (*Piñon* 65). Pinyon pines, after all, take over two years to develop their nuts fully and they broadcast their potential crop yields at least a year in advance. Lanner speculates, in fact, that the generally consistent and localized supplies of pine nuts allowed the Ancestral Puebloans of the Colorado Plateau some leeway as they transitioned from a hunter-gatherer lifestyle to one based on cultivation of maize. The availability of pine nuts guaranteed them a relatively easily gathered source of food as they worked to adopt and adapt cultivation strategies (*Piñon* 66). Other, more nomadic

nations, the Great Basin Goshutes, for example, based their movements and winter camp locations on pine nut harvests, meaning that the semipermanent winter camps were often found at the mouths of canyons or within the pinyon-juniper belt on mountains (Cuch 78, 81). American Indian populations generally associated with the harvesting of pine nuts include the Navajo, Tewa, Rio Grande, Zuñi, Hopi, Washo, Western Shoshone, and Paiute, among others.

Strategies for the gathering of pine nuts vary depending on species (Colorado or singleleaf pinyon), as well as time of year and personal preference. Since pine nuts ripen before the cones in which they are held open, some peoples—including the Goshutes, Hualapai, and Panamint of the dry and harsh Great Basin—choose to decrease the potential loss of pine nuts to birds and rodents and so to harvest green cones before they have even opened. Long, hooked sticks are used to knock cones free from branches, or to pull branches down low enough to allow manual cone removal. The cones can be stored as is, or thrown onto a fire, resulting in the simultaneous opening of the cones and roasting of the nuts (Lanner, *Piñon* 68–69). Other nations and bands choose to wait until the cones have dried and opened, at which point the branches can be beaten, causing the nuts to fall into a waiting canvas. Forrest S. Cuch, a member of the Ute nation and current director of the Utah Division of Indian Affairs, describes how the mixture that collected on the canvas was then winnowed to separate the heavy, true nuts from the empty shells, needles, and other debris (29) (see Figure 3.1). Alternatively, if the nuts have already fallen from the cone, one can collect them individually from the ground. As the season progresses and more nuts drop from their cones, this labor-intensive form of gathering becomes the only option.

Figure 3.1. Woman winnowing pine nuts. Courtesy Special Collections, University of Nevada-Reno Library.

Once harvested, the nuts are generally roasted, which helps prevent the oil-rich nut from going rancid in storage. The thickness and durability of pine nuts varies by species, and though some eat certain nuts shell and all, it is more common to remove the nuts from the shell. The large quantities of pine nuts often gathered can necessitate the use of some sort of technology to crack multiple shells at once and to speed the shelling process; historically this was done with hulling stones and a winnowing to remove the cracked shells from the nuts (see Figure 3.2). Pine nuts are consumed in a variety of ways, and the historic manners of consumption to some degree varied according to each culture's dependence on the nut as a food stuff. The cultures with fewer types of food available to them throughout the winter and that counted on the nut to get them

Figure 3.2. Cracking pine nuts shells with a mano. Courtesy Special Collections, University of Nevada-Reno Library.

through those lean months—including the Great Basin Shoshone, Northern Paiute, and Washo—often ground the nuts to a paste or butter, or mashed them into a soup or mush. For southern cultures that adopted maize farming, pine nuts became less of a subsistence foodstuff and more of a treat or snack (Lanner, *Piñon* 70).

Many cultures of the American Southwest—the Paiute of the Colorado Plateau, the Western Shoshone, and the Washo, for example—treated the months of the pine nut harvest as a time of celebration, holding long festivals and ceremonies where distant bands would reunite each year. The frenzy and exuberance ignited by a mast year harvest was shared by non-Indian populations, and are evident well into modern times. Haniel Long describes the festivities and chaos of a pine nut harvest in the early 1940s:

> To gather them is an occasion for the whole family to work together, and if relatives are visiting, to get some work out of the relatives. Cars and wagons lie like beetles along the highways and byways. You hear people and children chattering not far away, with as much noise as the piñon-jays whose blue wings flash among the branches. The dwarf trees are suddenly a vineyard: the barren land turns fruitful and calls for pickers. Little children run from tree to tree picking up the nuts that have fallen. . . . Against the dark green of the trees the cones are a beautiful henna inside and flare out in ever wider clusters of dark little coffee berries, until they literally bend backward. The taste is pine and sunshine and popcorn, and peanuts too in a way. (25–56)

The historical festivals and ceremonies of American Indians, however, may have been more than simply times for harvesting pine nuts and exchanging stories and goods. Lanner cites one theory claiming that the pine nut festivals held by Western Shoshone bands were arranged a year in advance, at the current year's festival. The next year's harvest would be scouted and the ceremony location determined based on where crops would be especially high. If the scouts were unable to find any potential bumper crops,

the nations and bands would have sufficient time to take measures, sometimes extreme and perhaps draconian, to prevent mass starvation the following winter (*Piñon* 80–81).

Additional Uses of Pinyon Pines

Historic and prehistoric indigenous cultures utilized all aspects of the pinyon tree, not just the nutritious nut. Branches and limbs became poles, beams, and corral posts, and provided wood for fires and carvings. The sticky pitch, an annoyance when gathering nuts or cones, was used as a chewing gum, to make glue and dye, to waterproof baskets and jugs, and to provide nonstick cooking surfaces (Lanner, *Piñon* 58–61; Niethammer 49). Some cultures, including the Navajo, would traditionally smear the bodies of the deceased with pitch prior to burial and adorned their own faces with the same substance as a sign of mourning (Savinelli 83). The incense of burning pitch is used by members of the Hopi nation to smoke the bodies and clothes of those grieving a household death (Niethammer 50). Ceremonial uses of the tree can also include the display of saplings or branches, the burning of pitch for incense, and the consumption of young buds.

The pinyon pine has numerous medicinal uses as well. When combined with tallow and red clay, pinyon pitch produces a salve used to cover wounds or cuts (Savinelli 83). Additionally, the pitch, when consumed directly, acts as a diuretic and powerful expectorant, and can also help relieve urinary tract infections (Savinelli 84). Navajo and Zuñi peoples have used the needles of the pinyon pine to treat syphilis (Savinelli 85; Niethammer 50), and members of the Sword Swallowers order of the Zuñi Great Fire Fraternity eat young shoots of the pinyon pine if they want their wives to bear daughters (Lanner, *Piñon* 62).

American Indians and the Land: Euro-American Conceptions

As anthropologist Shepard Krech III writes, since their arrival in the new land, Euro-Americans have, in an effort to reconcile the unfamiliar with the familiar, attempted to define, classify, and organize American Indians however they could. These classifications have often fallen primarily into the stereotypes of "Noble Savage" and "Ignoble Savage": the first of those caricatures emphasizing "the rationality, vigor, and morality of the nature-dwelling native; the second, the cannibalistic, bloodthirsty, inhuman aspects of savage life" (Krech, *Ecological Indian* 16). Each of these outsider labels of American Indians is, of course, problematic in its own way and for a number of reasons, largely because they encourage various forms of colonial and imperialist behaviors. For the purposes of this examination, however, I wish to explore only the consequences of those labels in relation to the portrayal of the American Indian relationship to the nonhuman world.

Like the general stereotyping of American Indians, the characterizing of their relationship to the natural world often splits into two categories, each relating to the previously described Noble and Ignoble Savage myths and each dependent on the Euro-American notion that American Indians, by their nature, have a deep and complex relationship with the nonhuman world. American Indians, and indigenous peoples around the world, were and are consistently portrayed as having an intricate relationship with—indeed, *being* an intricate part of—the environments that surrounded them. The ways in which Euro-Americans viewed the natural world of which American Indians were assumed to be a part, then, often had a dramatic effect on the way that American Indians themselves were viewed and treated.

Hideous and Desolate, Cursed and Chaotic:
Early America and the Ignoble Savage

To the early European pilgrims, the natural world in America was drastically different than most of what they had left behind. It was a frightening place, not only because it was in many ways truly dangerous, but because the fears and trepidations inherent in the pilgrims' journey were oftentimes transferred onto the vast and unknown landscape. In large part because of its unfamiliarity, the nature of the pilgrims' new world was portrayed in their early accounts as treacherous and terrifying. The nonhuman world was a place and thing to be feared and hated. William Bradford—leader of the *Mayflower* pilgrims—classified the land the pilgrims encountered as a "hideous and desolate wilderness" filled with "woods and thickets." Their return to England and "all the civil parts of the world" was blocked by "a mighty ocean" (283). As Roderick Nash has explained, the wilderness of the new lands was thought to be a "moral vacuum, a cursed and chaotic wasteland" (24). Many of the pilgrims dreaded and loathed the immense and wild world they found themselves surrounded by, and they reacted to those feelings by avoiding and scorning it.

The original human inhabitants of this New World were equally as frightening and unfamiliar. Nash, again, describes the terror of early European settlers as they imagined, and experienced, attacks by American Indians: "sweeping out of the forest to strike, and then melting back into it, savages were almost always associated with wilderness" (28). Nash quotes a Euro-American inhabitant of the 18th century describing the wilderness as "a harbour where it is impossible to find [the Indians]. . . a door through which they can enter our country whenever they please" (28). Both of these descriptions highlight the ease and consistency with which Euro-Americans correlated and welded

together the unfamiliar lands of America and the unfamiliar people who lived there, as well as the distinctions clearly made between the wilderness of the Ignoble Savage and the domesticated and safe "country" of the Euro-Americans.

The alien and horrifying new lands faced by the Euro-American colonists elicited an unsurprising response: "The pioneer, in short, lived too close to wilderness for appreciation. Understandably, his attitude was hostile and his dominant criteria utilitarian. The *conquest* of wilderness was his major concern" (Nash 24). Complete and utter conquest, of course, necessitated domination of all aspects of the wilderness, including the peoples that Euro-Americans had defined as a central part of the natural world. Environmental justice scholar Giovanna Di Chiro has described the colonial practice wherein native or indigenous peoples are "seen to be part of a wild, untamed nature that [has] to be exploited and controlled," and so they, too, must be exploited and controlled (302). Placing certain peoples on the "nature" side of a human-nature duality legitimizes the conquering, civilizing, and destruction of that people right alongside the corresponding civilizing and destruction of the land. As Whitt and Slack further explain, "the tendency of Western societies to parse out [certain] humans as separate from and dominant over nature is a habit of thought and a pattern of action which buttresses the tendency to parse out certain humans as separate from and dominant over others" (5). Thus, the Euro-American characterization of American Indians as a fundamental part of the natural world has, in some situations, fostered a Euro-American imagining of a treacherous and dangerous place populated by an equally malicious people, and so has permitted and encouraged the domination and destruction of both land and people.

The Noble Savage and the Ecological Indian

In stark contrast to the image of the Ignoble Savage is that of the Noble Savage, an equally popular and powerful stereotype found throughout American history. In this portrayal, American Indians are treated just as much as part of the natural world, though in this instance the natural world—and so the American Indian—has none of the negative or dangerous connotation previously described. Instead, Romanticism dominates and encourages "enthusiasm for the strange, remote, solitary, and mysterious" (Nash 47). The natural world, then, was and is variously viewed as a source of beauty, abundance, and renewal. American Indians, rather than being portrayed as savage and wild, were and are assumed to be more spiritually and physically connected with the natural world, more environmentally conscious, and generally more ecologically aware than their non-Indian counterparts.

The foundation for this approach rests on the conception of all indigenous peoples, not solely American Indians, as "living innocent, vigorous, clean lives in a golden world of nature" (Krech, "American Indians" 42). Indigenous peoples were seen to be "simple and generous" and "living in the midst of an opulent nature" (Hemming 8). The nobility of these peoples, at least when described within the parameters of the dominant Noble Savage myth, was believed to be "ontologically essential"; that is, indigenous peoples were "noble by nature, rather than displaying isolated traits, such as ways of moving or speaking, or other elements to which qualities of nobility could be ascribed." Additionally, this nobility was assigned not to individuals but to groups, as it was the "result of a natural way of life shared by all members," and these groups were noble in comparison not to other indigenous peoples, but to Europeans (Ellingson 46).

The motivations behind the Euro-American tendency to romanticize both the natural world and indigenous peoples will be explored more fully in the next chapter, but for now it is sufficient to recognize its occurrence.

The contemporary manifestations of the Noble Savage myth in relation to American Indians have leaned toward what Krech has termed the "Ecological Indian": a "noble image speaking to ecological wisdom and prudent care for the land and its resources," undoubtedly conservationist and ecologist (*Ecological Indian* 16). Part of this tendency to paint American Indians as ecological stewards has grown out of the recognition by the general American public of the vast and sometimes irreparable environmental degradation occurring throughout the nation and the world. American Indians became "convenient symbols of ecological harmony" as environmental movements developed and expanded (Weaver 3). These symbols took literal form in the shape of such publications as Keep America Beautiful, Inc.'s famous advertisement featuring a crying American Indian lamenting the destruction caused by rampant pollution. As environmental destruction becomes more prevalent and devastating, writes Freda Rajotte, "more people are turning to the traditional teachings and wisdom of the First Nations, hoping to learn how to live in closer harmony with nature and with the spiritual realms" (4).

Krech has written extensively on the problems associated with this ecological portrayal of American Indians. He finds little evidence to support the assumption that prehistoric and historic American Indians were ecologists or conservationists in the modern sense. Though Krech readily accepts that "time and again indigenous people show command of extensive—albeit cultural (it cannot be otherwise)—knowledge of

their environment," he argues that "one cannot assume that such knowledge is static or universally commanded" (Krech, "Reflections" 79). Furthermore, though the relatively small populations of indigenous peoples may have prevented their ecological footprint from reaching the degree or extent of Euro-Americans', "indigenous people have undeniably acted in ways antithetical to conservation" (Krech, "Reflections" 81). For many contemporary American Indians, as for many non-Indians, "economic concerns trump green issues," and so decisions that might cause environmental degradation are made (Krech, "Reflections" 84). In his controversial book *The Ecological Indian: Myth and History*, Krech recounts numerous science-based case studies demonstrating not only the perceived less-than-ideal environmental practices of indigenous populations, such as the Pleistocene-era extinctions of a number of animal species caused by Paleoindians, but also the deep and lasting effects of American Indian manipulation of the natural world—as in their use of fire—and the corresponding development of a "cultural not virgin, anthropogenic not primeval" environment (122).

Krech's theory has, not surprisingly, been deeply criticized by a number of American Indian and non-Indian scholars. Darren J. Ranco, for example, a member of the Penobscot Indian Nation and a scholar of Native American and environmental studies, claims that "by urging us to take the 'scientific evidence' at its face value, [Krech] has tried to hide (unwittingly perhaps) the political aspects of his 'findings'" (32). Ranco takes issue with Krech's ultimate claims that American Indians are no different than Euro-Americans in regard to their environmental practices because such a conclusion offers "a pretense that colonization did not happen, that neocolonial arrangements do not continue to exist, and that reservation environments are not regularly targeted for

detrimental environmental practices because of their unique semi-sovereign status" (50). The merit of these and other claims is valid, but does little to negate the potential negative consequences, for Euro-American and American Indian interaction particularly, of Euro-American portrayals of American Indians as such ecological stewards.

The Consequences of the Myth of Ecological Indian

The potential negative consequences of the Euro-American portrayal of American Indians as uniquely connected to the natural world are great. As described above, the interrelated myths of the Ignoble Savage and the frightening and dangerous wilderness allowed for and encouraged the material domination of both. Equally troublesome, though perhaps slightly less obvious, are the more subtle methods of colonialism and Euro-American supremacy that accompany the myths of the romanticized wilderness and the benign Noble Savage and Ecological Indian.

Rhetorical communication scholar Danielle Endres, in her study of nuclear facility siting on American Indian lands, has shown that only scientific and technical arguments, and not social, political, and emotional (or spiritual and traditional), are classified as "legitimate" in the formation of public policy (Endres 47). Indeed, scientists and resources managers tend to view the traditional knowledge of indigenous peoples as "mere folklore," an approach that "leads to the replacement of local-knowledge specialists and leaders with alien scientific and technical 'experts'" (Posey *xii*). Because American Indians are so prevalently portrayed as uniquely connected with the natural world, even those individuals who do obtain and disseminate "scientific" information, and of course those who hold only more traditional stores of knowledge, are more likely

to have their views, concerns, and opinions—and thus their needs—play second fiddle to those espoused by the dominant science and technology. The privileging of scientific over traditional knowledge and the correlated exclusion of that knowledge in policy formation demonstrates another example of colonial behavior: silencing. As defined and argued by Endres, "strategic silence acts as a form of rhetorical exclusion when silence is used by a group with power over another group as a way to exclude their voices or arguments" (52). (In recent years, modern science and resource management have begun to recognize the importance and legitimacy of traditional ecological knowledge, and have correspondingly begun to utilize and appropriate that knowledge, a problematic movement in itself and one that will be discussed in the following chapter.)

The image of the benign, generous, and ecologically aware American Indian also invites a sort of imperialist nostalgia and preservationist desire in which American Indians are relegated to "a historical and ethnographic space defined by the Western imagination. That means, among other things, that Indians' destiny limits them to static, 'traditional,' pasts" (Smith 9). Renato Rosaldo has described this attitude of nostalgia as one that "makes racial domination appear innocent and pure" and in which a dominating "people mourn the passing of what they themselves have transformed" (68–69). Euro-Americans, then, espouse and hold tight to a sentimental and simplified vision of historic and contemporary American Indians, while simultaneously and easily ignoring their own complicity in the colonization and destruction of those peoples.

American Indians who fail to fulfill the parameters of the Noble Savage myth—by allowing, seeking out, or otherwise participating in less environmentally friendly activities such as nuclear waste storage or mineral resource development—are classified

as less "authentic" and are criticized for behaviors that are both typical of non-Indians and otherwise readily acceptable by them. There is a "disjuncture," Harkin and Lewis say, between the "standard cultural repertoire that has remained remarkably stable over the course of American history, and the reality—encountered on or off the reservation—of change," and a disregarding of the actuality that American Indians are "modern peoples with deep traditions navigating present realities and needs" (*xxi*). Krech gives a concise and challenging summary of the hypocrisy and dangers of this Euro-American tendency:

> The connections between Indians and nature have been so tightly drawn over five hundred years, and especially in the last quarter of the twentieth century, that many non-Indians expect indigenous people to walk softly in their moccasins as conservationists and even in (Muir's sense) preservationists. When they have not, they have at times eagerly been condemned, accused of not acting as Indians should, and held to standards that they and their accusers have seldom met. (*Ecological Indian* 216)

The denial of American Indian nations and individuals as being modern populations with changing needs, and the obvious duplicity and unequal power relationships, are not the only concern within this practice. Even more troublesome is the potential that such views invite for the continued domination and subjugation of American Indians by Euro-Americans. Naming American Indians as ecologists and conservationists, and then condemning any actions they take that seem contradictory to those labels, creates a larger American culture in which American Indians face a double-edged sword: either they take advantage of opportunities for economic improvement and self-reliance and face the backlash of the environmental and general American public, or they adhere to a characterization they may or may not approve of and forgo those

economic prospects. Neither choice offers much of a path toward equalizing their socio-economic status or rectifying the negative consequences of years of domination.

Navajos, Pickers, and Pine Nuts: A Contemporary Euro-American Portrayal of American Indians

The stories told by Euro-Americans about American Indian cultures and nations and their relationships with the pinyon-juniper ecosystem are often told without malicious intent. Some of those stories do offer fair, harmless, even informative accounts of the history of the Southwest and its peoples. Others are more damaging, and I turn now to exploring a narrative created by a dominant and colonialist society that could have detrimental effects for various American Indian communities. Throughout this critique I do not, as mentioned before, assume in any way to be speaking on behalf of or for any American Indian nation or citizens. There is value simply in revealing where and how colonial, exclusionary, and other threatening behaviors are perpetuated in order to offer avenues for resistance, if such resistance be desired. As critical rhetorician Marouf Hasian, Jr. explains, "in a world of limited access to communicative channels, scarce resources, and disparate power relations, there are many silences and elisions," and I hope only to aid in the exposure of those exclusions (25).

In April of 1993, the United States Department of Agriculture hosted a symposium—*Managing Piñon-Juniper Ecosystems for Sustainability and Social Needs*—designed to "assist the USDA Forest Service, other federal land management agencies, and the New Mexico State Land Office in the future development and management of the piñon-juniper ecosystem in the Southwest" (Aldon & Shaw *ii*). Later that year, the conference proceedings were published. Though the text of the symposium as a whole

offers the potential for a rich demonstration of the damaging discourse referred to above, I have elected to focus on a speech given by Ellis Tanner, the fourth-generation proprietor of a trading post located in Gallup, New Mexico, near the Navajo and Zuñi pueblo reservations.[1, 2] Tanner's speech—"Four Generations Trading Piñon Nuts with Native Americans: Changes Needed for Future Prosperity"—is intended primarily to convince his audience of the need to expand and regulate the pine nut industry.

Tanner lays out what he believes could be done to make the pine nut industry more stable, competitive, and profitable. He explains his family history in running several trading posts within or near the Navajo reservation in the Four Corners region of the southwestern United States. After inviting his audience to "walk in the shoes" of the three major players in the pine nut industry of the region—the pickers, the traders, and the buyers—Tanner explains why he believes the industry is struggling and what can be done to make the pine nut "a major cash crop for New Mexico" and other southwestern states (32). Tanner argues that, for the benefit of all parties involved, a base fixed price of $2.00 per pound should be guaranteed to the pine nut picker. Doing so would grant a fair wage to pickers, prevent the large commercial nut buyers from driving down prices, and ensure a steady market for pine nuts over the course of the year. What follows is an exploration of this speech as a study of a contemporary instance of the previously described myths and stories regarding American Indians and their relationship with the nonhuman world.

Universalizing Diverse Peoples

Despite the fact that there are hundreds of American Indian nations across the United States and Canada, each with their own unique culture, value systems, and beliefs,

American Indians are often viewed and treated by non-Indians as a unified whole. There likely are underlying tenets found within all American Indian religions, for example, just as there are base beliefs fundamental to all branches of Christianity. And perhaps these tenets encourage similar worldviews or cultural tendencies. It is dangerous, however, to extrapolate from those similarities the assumption that all American Indian nations and individuals think, believe, or act in the same way. The contrasts between the equally prevalent "wise use" and "ecological" Christian movements demonstrate just how disparate the actions and principles of seemingly similar communities can be. Many of the concerns further developed in the following sections of this chapter stem from this tendency to generalize and universalize all American Indian peoples.

Strategies of Marginalization

Perhaps the most common generalization of American Indian peoples, and one which ultimately underlies many of the other discourses surrounding American Indians, is that which presents indigenous peoples as an "other," a group or community drastically different from the dominant White, Western community. Postcolonial theorist Raka Shome has described the practice of "othering" as the portrayal of a marginalized group as "racially inferior and hence open to subjection by (white) Western discursive practices" (42). By first marginalizing a people or culture by relegating them to the status of an "other," dominant cultures legitimize the creation of pathways by which they might further exploit or control those marginalized populations. Historically, the technique of othering is what led to the development of the Ignoble and Noble Savages myths, as well as other stereotypes of American Indians, all of which then justified corresponding Euro-

American actions: the defining of American Indians as barbaric savages legitimized their slaughter and enslavement; the image of the Ecological Indian permitted a more subtle yet equally devastating relegation of American Indians to particular roles within American culture. These definitions have changed with time, almost always to the disadvantage of the American Indian, so that they are continually "trapped by the racial definitions, stereotypes, and myths" perpetuated by a White, Western society and the "power to define themselves and their destinies pass[es] from their own hands to the hands of their oppressors" (Bosmajian 76, 89). Such othering continues today, of course, and Tanner's speech offers a more modern illustration of this process, one that is perhaps less immediately appalling, but that remains problematic.

Tanner begins his presentation by asking the audience to "sit back and relax" as he tells them about himself and his family, so the audience might "understand a little better where [he is] coming from" (29). In doing so, Tanner creates immediate identification with the audience, at the expense of those about whom he is speaking. Tanner invites his audience to go out and watch Navajos as they gather pine nuts, so they will believe as he does that the Navajo are efficient and precise in their harvesting of nuts. Such an invitation creates an "us" *versus* "them" relationship and an aura of spectacle in which a dominant group is privileged to watch and judge another population. He encourages his audience to experience harvesting pine nuts "for a day," promising that they "won't be back for the second day" and suggesting that they leave the "hard work" to others, the Navajo (30). The audience is pushed to distance themselves from both the work of picking pine nuts and the people who complete that work in order to make a living. The attitude of "us" *versus* "them" crafted by Tanner is also demonstrated

in Tanner's description of traders as having to "face disappointed, angry and frustrated Navajo piñon pickers who tell the traders they are cheating them" when the prices for pine nuts are low (31). Already, the audience has been informed that the driving down of prices is the fault of the large commercial buyers, not the little, independent traders, and so the audience sympathizes with the trader who faces such unjustified anger, and against the Navajo who so unfairly blames the trader.

Soon after, Tanner moves into a description of the trading posts of the region, and of the "Navajo Shopping Center" his family established on the reservation. After the creation of that center, Navajos, instead of going to a trading post to barter and "point at what they wanted to buy," could sell their wares for cash and use it to "shop like we do today in grocery stores" (29). Traditional bartering systems are shown to be outdated and unusual, and those who participate in or depend on them likewise so. The perceived need of a people to be "civilized" presupposes an inherent difference between the two groups who follow such different systems. Tanner also describes for his audience other cultural practices of the Navajos, including the gathering and storing of pine nuts, the traditional offerings and prayers made to "Mother Earth," and the Navajo's self-identification as the "Earth People" (30). Each of these characteristics is presented as evidence of how the Navajo are "like no one else on the face of the earth," and so Tanner—via an authority granted by his experience as owner of a trading post—must translate their beliefs and practices for his general audience (30).

Tanner also consistently uses the rhetorical strategy of naming to further "other" the Navajo people and to increase the divide he has created between Navajos and non-Navajos. Timothy A. Borchers explains the power inherent in this action of labeling as

stemming from the unavoidable influence that names have on how people interact with objects (192). As Karyln Kohrs Campbell makes clear, "names are valuative as well as descriptive," and so the names that we apply to certain objects or people affect the way in which we correspondingly view and interact with them (287). In her exploration of the ways in which Euro-Americans have viewed, portrayed, and interacted with American Indians during the late nineteenth and early twentieth centuries, Sherry Lynn Smith explains how a wide range of non-Indian populations and individuals did and continue to "compete" for the opportunity to "construct identities for Indians," each contesting the "right to speak on behalf of Indians, to define them. . . and to influence the political agenda regarding federal Indian policy" (5).

All of these approaches, of course, rely heavily on Kenneth Burke's conception of the terministic screen, which argues that "even if any given terminology is a *reflection* of reality, by its very nature as a terminology it must be a *selection* of reality; and to this extent it must function also as a *deflection* of reality" (45). Names and labels, then, can never reflect perfectly the reality that they designate, and cultural and societal ideologies are always implicit in the choices made regarding which aspects of that reality will be portrayed and which omitted in the naming process. Naming becomes a manner of manipulation, managing and prescribing the connotations, emotions, and even actions that are and will be associated with the named object. One should remember, however, that the implementation of such labeling practices is often unintentional, and rarely represents "willful and intentionally malicious actions of imperialistic predators," but rather demonstrates the prevalence of colonial, prejudiced, or otherwise dominating

ideologies and the ways in which such practitioners are often themselves "captured" by those very ideologies (Stuckey and Murphy 90). Such is the case, I believe, with Tanner.

In his presentation, Tanner renames the Navajo—collectively and individually—as "pickers," one of the three roles he delineates within the pine nut industry: "pickers" do the initial labor of gathering; "traders" buy the nuts from the "pickers" in order to sell them to larger, often corporate "buyers." In approximately fourteen instances of the word "picker" within Tanner's presentation, twelve were either immediately preceded or followed by "Navajo." Eventually, the two terms become interchangeable. Tanner discusses a year in which he paid $5.00 per pound for nuts, a justifiable high price because of the year's poor crop and the fact that "the trees that have nuts are scattered and the Navajos have to work hard just to find them" (30). It is "Navajos," as opposed to "pickers," that struggled to find nuts.

At times, Tanner also simultaneously refers to "the traders and the Navajos," a phrasal construction that compares an employment position (trader) with an ethnicity (Navajo), a process that Campbell describes as abstraction, or the omission of particular details "in order to treat different objects in similar ways" (Tanner 31; Campbell 288). Here, the ethnicity of the traders and the role of the Navajo are omitted. By this point, however, the audience has come to understand that Tanner means "Navajo" to stand for "picker," and so the ethnic person becomes synonymous with the role. When referring either to traders or buyers, however, Tanner never associates either with any ethnic or racial identity, unless it is a direct reference to himself or his family in the trader role. The consistent distinction between "the traders and the Navajos" ensures that the two are never conflated. In the industry of the pine nut, then, Navajos are not only allowed only

to be “pickers,” but are also the only people who are so defined. By so naming the Navajo, Tanner constrains the view toward the Navajo that his audience adopts by encouraging them to approach Navajo as others, things, and “pickers,” rather than as individual persons or an ethnic collection of people.

Navajos and the Natural World

Throughout his presentation, Tanner relies upon and expands the general portrayal of American Indians as closely and intimately related to the natural world. Tanner explicitly describes the Navajo people as connected with their surrounding environment, and also implies that deep relationship in his descriptions of the Navajo history with and ability in gathering pine nuts.

According to Tanner, who speaks on the authority granted him by his “Navajo friends,” the Navajo believe that “everything that grows on the earth has a purpose” and that the pine nut was “given” to the Navajo people by Mother Earth for use as a food and medicine, “to keep them alive, to keep them going from generation to generation.” He explains that the Navajo call themselves the Diné, or the “Earth People,” a name which they prefer over the Spanish-assigned name “Navajo,” and as such, they “have a great respect for Mother Earth and everything she produces.” (Tanner seems to disregard that expressed preference for “Diné,” however, and continues to call them by “Navajo,” implicating himself in dominating behavior in yet another manner.) This respect dictated that the Navajo people “take a certain amount of the piñons they picked and give them back to the Earth with a prayer and an offering of turquoise so there would be more piñons in the future” (30). Here, the Navajo are portrayed generally as having an intricate

relationship with "Mother Earth," one based on reciprocity, respect, and tradition. Indeed, only by ensuring that the Navajo pickers receive fair prices for gathered nuts can the Navajo's "pride and dignity can be restored in his [*sic*] gift from Mother Earth" (31).

The Navajo, Tanner also explains, gather pine nuts "like no one else on the face of the earth." He estimates that Navajo complete 90% of the commercial pine nut harvest each year, clearly associating the Navajo people with that role, as he also does through the previously described method of making interchangeable the terms "Navajo" and "picker." Navajos are shown to be much more adept than non-Indians at gathering pine nuts, a job that involves leaving town (civilization), going out into the nonhuman world, and getting "down on your knees" to "pick the piñon nuts off of the ground." Tanner's mostly White, Western audience, however, after experiencing the "hard work" of gathering, "won't be back the second day" (30). Tanner assures his audience that the Navajo relish their role as "picker": they are always "excited to go out and bring in the piñon nuts" and they do so with "respect and pride" (31, 30). Here, Tanner seems to fall exactly in line with Buescher and Ono's explanation of the colonialist practice of continually reemphasizing the "proper positions, roles, and stations within colonialist society" (131). Colonizing entities must craft narratives in order to justify their colonial behavior, and by describing the Navajo practice of harvesting pine nuts as an important aspect of their cultural history and as an avenue through which individuals might "supplement their income," Tanner portrays himself and the pine nut industry as simply and benevolently providing the Navajo people with the opportunity to fulfill their cultural and material needs and desires (30).

The colonial features of Tanner's speech are also present in the suggested avenues for further study and resolution with which he concludes. Despite his emphasis on the tradition and cultural importance of gathering to the Navajo, Tanner makes no mention of maintaining that feature in his recommendations. In fact, he explicitly seems to advocate actions—like the institution of a permit system for harvesting and the development of an automatic picking machine—that emphasize the economic potential of pine nuts over their traditional importance, negating the American Indian knowledge of and experience with the pine nut through the transformation of the nut into a commodity (33).

Likewise, the action plan that concludes the entire symposium effectively privileges the scientific knowledge and economic importance of the pine nut over its traditional and cultural role, despite the assertion in the stated goals of the plan that cultural and human needs must be protected or met in the creation of new management practices for the piñon-juniper ecosystem (Aldon and Shaw 168). The "Recommended Actions" of the plan call only for the determination of the "potential impacts" of increased ecosystem management and use on the "social and cultural values of traditional communities" (Aldon and Shaw 169). Such a determination in no way guarantees the mitigation of such impacts. The majority of the proposed actions center on the scientific ways in which the piñon-juniper ecosystem might be managed to capitalize on the potential income provided by pine nuts. Additionally, no Indian national or governmental agency or representative is assigned any role within the implementation of any of the proposed actions, including the one that requests further understanding of the influence of management on traditional communities. Responsibility and power are granted, instead, to the Forest Service, regional universities, various land management agencies, the Piñon

Nut Industry, the Rural Economic Project, State Foresters, and other state or smaller federal land management or agricultural centers. Here, the traditional knowledge of the Navajo and other American Indians is forgotten in light of science and technology, and the needs and wants of those communities ignored.

Much of Tanner's narrative surrounding the Navajo also exhibits characteristics of the imperialist nostalgia described previously. Tanner argues for the expansion and growth of the pinenut industry, and in doing so, he also advocates for the spread of the empire of capitalism. While Tanner advances a market system that will potentially destroy or absorb the traditional methods of subsistence and recreational gathering that have long characterized pinenut harvesting in the southwestern United States, he simultaneously exalts the very characteristics of those practices that capitalism could make obsolete. Navajo pickers, Tanner says, "have a great respect for Mother Earth and everything she produces," and so approach the pinenut as a "gift" deserving of honor and admiration (30). There is little room, however, in the average capitalistic industry for the returning of harvested products to the Earth in the form of sacrifices, as Tanner explains Navajo traditionally do. And there is high likelihood that the "respect and pride" with which the Navajo gather pinenuts will lose out when capitalistic characteristics like efficiency, speed, and thoroughness come into play (30). Despite this reality, neither Tanner nor the symposium as a whole seem to offer any opportunity for the Navajo people to become incorporated into the ideal new industry while still maintaining their traditional beliefs and practices. Thus, the Navajo are stuck as a static idealization within the minds of the dominant society, unable to move beyond the traditional roles to which they have been relegated, but equally unable to sustain themselves in those roles.

The stories that are told regarding cultural interactions with the nonhuman world can have a drastic effect not only on the natural world, but also on certain populations within the human world. There are many potential dangers when one culture, particularly a dominant culture, begins to dictate, define, or otherwise control or imagine the manners in which a subordinate culture interacts with the natural world. The narratives of the American Indian relationship with their surrounding environment as crafted by Euro-Americans—whether stories of malicious, violent, environmentally destructive savages or of conservationist, ecologically aware, benevolent nobles—have been partially responsible for many of the horrendous practices and regulations to which American Indians have been subjected throughout American history. They continue to influence the manner in which American Indians and indigenous peoples around the world are (mis)treated today.

Notes

1. Don Grieser is listed as co-author of Ellis Tanner's presentation. I refer only to Tanner in my critique because it is clear throughout the text that he is the one who delivered the actual speech, and because it is otherwise impossible to determine which of the authors contributed what to the final text.

2. I recognize the often preferred usage of the term "Diné" or "Dine" in reference to the people also called Navajo. I use "Navajo" only to maintain clarity and consistency in discussing this presentation, as that is the terminology utilized by Tanner throughout.

CHAPTER FOUR

THE RESOURCE STORY

Introduction

Chapter two presented a brief examination of some of the manners in which the "scientific" story about a place or community may reveal an underlying tendency for science to view and approach the features of both the nonhuman and human worlds as things only to be studied, measured, dissected, and deconstructed. The knowledge that science can provide is, indeed, often highly valuable, but, as was explained, the actions regarding the nonhuman world that are expounded by science have often shown themselves to be highly instrumental, hasty, imprudent, and, sometimes, downright dangerous. Often, these erroneous proposals arise where scientific knowledge and human desires and needs intersect, where science (and culture) reveal a potential resource in the nonhuman world and advocate for human adoption and utilization of that resource.

This chapter explores the resourcing of various aspects of the pinyon-juniper ecosystem—from things to knowledge to people—and begins, ever so briefly, to examine the effects that such actions might have on the thing so acted upon. While much of this resourcing relates directly to the commodification of these things, the manipulation does

not always take such a monetary form, and so the term resourcing is more broadly applicable. These potential resources range from the obvious and expected, like the pine nut and the pinyon tree, to the more obscure and confusing, including knowledge itself and, perhaps most troubling, people. Each of these will be examined in turn, as will the manners in which such resourcing degrades the relationships between and within the human and nonhuman worlds.

Foodstuffs, Forage, and Fence Posts: The Resourcing of Things

The Pine Nut

In examining the many ways in which resourcing of the pinyon-juniper ecosystem takes place, it is helpful to start small, in this case, very small. The pine nut, as has been described, is the edible nut produced by a limited number of pine species, the most important of those for the American Southwest being the singleleaf and Colorado pinyons. Though history and opinion will debate the relative importance of the pine nut to various prehistoric and historic populations, there is little doubt that it is one of the more unusual, if not the most unique, features of both the tree and the ecosystem.

Earlier chapters have described many of the ways in which pine nuts were central to both the physical survival and cultural identities of a number of southwestern populations, indigenous and not alike. These chapters, however, did not examine the specific commodified resource value assigned to pine nuts, largely because that monetary-based valuation is a relatively recent development. Indeed, Gary Paul Nabhan reminds us that early Euro-Americans often viewed many foodstuffs traditionally hunted or gathered by early American Indians, including pine nuts, as “poor man’s food”

unworthy of the more civilized Euro-American palate and stomach ("Nevada" 224). Likewise, Lanner explains that the seminomadic Indians of the early historic Great Basin were degradingly termed "Diggers" after their harvesting of a variety of edible roots (*Piñon* 73).

Not always, however, were pine nuts viewed in such derogatory manners. Spanish explorer Alvar Núñez Cabeza de Vaca, in his written account of his early-sixteenth-century walk from the southeastern United States to the Gulf of California, described the lands and features he encountered, including the pine nuts of the American Southwest: "There are in that land small pines and the nuts from them are like small eggs, but the [nuts] are better than those of Castile because they have very thin shells" (Krieger 217). Slowly, pine nuts gained legitimacy within Euro-American and other nonnative populations, who all began to undertake their own yearly harvests by the 1940s, occasions when "grown-up people spread a sheet underneath the tree and beat the nuts down with an old broom," fill flour sacks with the fallen nuts, and return to their homes "in the October dusk after a long day and two meals in the open," having "made sure of one source of food for the winter" (Long 26). Individual households would collect upwards of two thousand pounds each year for personal consumption and for producing cooking oils (Kline 5). Euro-American harvesting for personal consumption eventually gave way to harvesting for market sales. Of course, since their arrival in the Southwest, American Indians have likely sold, traded, and bartered pine nuts (Lanner, *Piñon* 103). Spanish colonists used pine nuts as cash, and "recognized the value of the piñon nuts and made them the primary commodity exported back to Mexico" (Kline 5).

While exact numbers are difficult to procure, there is little doubt that such high valuation continued into later centuries and is still present today. In the 1920s, the box cars of "entire railroad trains" were loaded with pine nuts and shipped to New York. The town of Gallup shipped 8 million pounds of pine nuts in 1936 alone, and similar loads continued throughout the 1940s. A 1987 study estimated the value of pine nuts in New Mexico to be around $300 per acre, so the 2.4 million acres of Forest Service pinyon-juniper woodlands in the state had a potential value then of $72,000,000 per year (Kline 5–6). In 2004, annual sales of pine nuts, imported and domestic, in the U.S. were estimated at $100 million (Sharashkin and Gold 4). The relatively rare nuts demand high prices—upwards of $20–$30 per kilogram—and, because worldwide production always falls short of demand, these prices remain inelastic, in that they do not drop with bumper crop yields as do most agricultural commodities (Sharashkin and Gold 4–5). Such huge numbers and important market characteristics have many land managers and owners across the Southwest "excited about the possibilities of commercial piñon nut harvest," as, to be fair, do the "relatively benign effects" of such harvesting on the woodland ecosystem, at least as demonstrated so far by small-scale harvesting (Norwick, Garcia, and Torgersen 24). Additionally, revenue generation does not have to be limited only to the sale of actual nuts: permits, leases, and access rights can all be regulated and distributed as land and resource management agencies see fit.

Though the domestic market for American pine nuts is probably highest in the American Southwest, where it is said in a not uncontroversial manner that "Native Americans and Spanish Americans love to eat piñon nuts," such demand is not restricted to that region alone (Kline 6). According to one historian, in the early 1940s, nearly four-

fifths of the pine nuts harvested in the American Southwest were sold in eastern New York, where "pushcart vendors sell the nuts to people who miss the Russian pine nuts and the Italian pistachios of their homelands" (Long 25). Restaurants, confectioners, pesto-makers, and nut companies throughout the country all purchase large quantities of pine nuts for use in cookies, sauces, deserts, dressings, and ice creams. Excess or rancid nuts are used as animal feed. Value-added products made from pine nuts include ground nut flours, high-end cooking oils, and specialty charcoals. The Piñon Nut Act—passed in 1987 in New Mexico—made it illegal for any pine nut other than true North American piñon nuts to be marketed as "Piñon Nuts," a move designed to incentivize businesses to "purchase our own native grown and locally harvested piñon nuts," and to reap greater profits in doing so by being able to "claim 'wild Southwestern Piñon nuts' as an ingredient" in their products (Kline 6–7). A National Science Foundation study once declared pinyon pines as among only twenty native plants in the United States "whose production is seen as primary in terms of benefits to the national economy," and the "time may be ripe" for the pine nuts of North America, like maize, potatoes, and tomatoes before them, to make their way to the fields and hills of the Old World (Lanner 145–147).

Unfortunately, many land managers and interested parties claim, the American Southwest is failing to capitalize on the pine nut market sitting at their feet. Pine nuts, mostly preshelled, have been imported into the United States for nearly a century, originally marketed as under the Italian term "pignolias." Recently, Russian and Chinese pine nuts have provided increasing competition for North American nuts. It is estimated that 80–90% of the pine nuts consumed in the United States are imported (Sharashkin and Gold 5). In 1989, more than 2,327,676 pounds (1,055,806 kilograms) of shelled nuts,

with a customs value estimated at $5,562,000, were imported from China, topping the production of nuts from Colorado pinyons and not including imports from any other nation (Little, "Pine Nuts" 27). In contrast, the overseas market for North American pine nuts has remained relatively limited, largely due to the unpredictability of crops, the high labor costs of gathering nuts in relation to the costs of other international producers, and the priority often given traditional uses of pine nuts within the American Southwest (Alexander, Weigand, and Blatner 143). This in spite of the recognition that "anyone who has tasted the pine nuts of the world knows that Pinus edulis nuts are the most delicious pine nuts of all—better tasting than the pignoles of Italy, Spain, and Portugal and better than the Chinese and Korean pine nuts" (Kline 7).

The Pinyon-Juniper Ecosystem

Of course, the pine nut has rarely been the only commodity or product pulled from the pinyon-juniper ecosystem. In fact, for many years, the resource value assigned the pine nut paled in comparison to other resource values assigned the pinyon-juniper woodlands. Historically and contemporaneously, the woodlands have been at times utilized for alternative products including Christmas trees, boughs for wreaths, and wild seedlings, but the vast majority of pinyon-juniper woodland management has focused on maximizing just two specific products: wood and livestock forage. The following sections will focus on the extraction and development of these two resources as they have had by far the greatest effect on pinyon-juniper communities.

Fuelwood, Timber, and Other Wood Products

Despite the fact that lumber from pinyon pines is generally considered less desirable because it is short and knotty, pinyon wood has been utilized for numerous purposes since even before the arrival of Euro-Americans. Some of these traditional uses, such as for shade structures, have likely nearly disappeared completely, but many of the more traditional uses for pinyon wood—including for firewood, railroad ties, mine timbers, fence posts, pulp, and charcoal productions—still occur today. The relatively hard pinyon wood is also aesthetically pleasing, machines easily, and has high clearwood strength properties, and so can potentially be used for valued-added products like flooring, cabinets, furniture, cut stock, and truck beds (Mackes 174).

Additionally, recent technological developments have offered opportunity to utilize the wood from pinyons and junipers in even more creative and nontraditional ways. Wood can be fiberized, or broken down into individual fibers and fiber bundles, and then those bundles can be woven together. These woven fiber mats can be used as water filters for pollution and drainage control, for erosion control, in hydroponic growing systems, and pressed to form composite boards (Knaebe 166). Wood fibers and flours can also be blended with plastics, cements, and rubbers to create such wide-ranging value-added products as decking, railing, roofing, siding, fencing, children's play centers, musical instruments, signs, highway sound barriers, ceiling tiles, and shock-absorbent playground materials (Knaebe 166). In contrast to those who once termed fuel the most important use of pinyon and juniper wood, contemporary land managers now argue that utilizing wood for energy results in the lowest value exchange, but they recognize the consistent market demand for fuel and energy, and so are working to

develop a variety of generators fueled by wood pellets and other woody biomass (Knaebe 167–169).

Historically, fuelwood and energy has played a more significant role in the utilization of pinyon than contemporary land managers would have you believe. In the late nineteenth- and early twentieth-century American Southwest, for example, it was often held that burning pinyon wood as a fuel was "the most important use to which the tree is applied" since, "upon burning, the heat released appears to be unequaled by any plant in the area" (Fogg 104). Lanner describes in detail the deforestation driven largely by energy needs that took place in Nevada during the height of the silver rush of the mid-nineteenth century. Silver mining required massive quantities of wood: beams and posts buttressed mine shafts, wood charcoal was used to smelt ore, and firewood was required for everyday heat and cooking. Miners, who were often opening "new" lands and so were unable to depend on railroad service for wood products, instead harvested whatever was available locally, including pinyon pines and junipers. These local supplies, however, were quickly depleted. No surprise, really, when the mines working the Comstock Lode alone required 18 million board feet annually and in 1868 Virginia City, Nevada, consumed 568 cords of wood daily. By the 1870s, miners in towns such as Eureka, Nevada, had mined all of the "easy" silver and were forced to smelt ores to extract the silver. The combined Eureka furnaces could smelt 595 tons of ore per day, requiring 17,850 bushels of charcoal to do so, charcoal produced from over 530 cords of pinyon wood harvested from fifty acres of woodlands every day. After one year of mining, Lanner says, "the hills around Eureka were bare of trees for ten miles in every direction." By 1878, that radius had grown to fifty miles (*Piñon* 117–130).

Conservationist and author William deBuys describes another, more contemporary deforestation, this one perhaps more well-intentioned but equally unrealistic and disastrous in practice. In the late 1960s and early 1970s, fuelwood cooperatives were developed in several national forests of New Mexico. The programs, designed to "bring land-based economic activity to poor, rural communities," enabled these local communities to harvest and market pinyon and juniper woods collectively. And the people did just that, cutting thousands of cords of live pinyon and juniper and earning significant amounts of money, in the short-term. But, as deBuys writes, "the negative effects were perhaps greater, and their consequences more enduring." For, unsurprisingly, many aspects of the harvesting were left unconsidered, and so the largest and most perfect trees were harvested, leaving only small or deformed trees to establish new seedlings; trunks, rather than branches, were hauled away, leaving no living thing to continue growing; and trails and roads were developed, encouraging soil erosion and disturbance. Long-term needs were forgotten or ignored, and once the easily harvested woods were quickly eliminated, the local people found their own future wood supplies wiped out and sold off. The blame for overharvesting, however, did not rest singularly with the local populations and the cooperatives. In 1976 alone, a single ranger district of the Carson National Forest issued permits allowing the harvest of 1,700 cords of wood, against an annual growth of only 250 cords, a permitting system deBuys termed "a program for the liquidating of a resource" (82–83).

Forage Production

Wood production has not been the only wide-ranging and extensive use for pinyon-juniper communities, however, and "from the end of World War II to the mid-1960s, considerable emphasis was placed on eliminating the woodland overstory to produce more forage for livestock" (Gottfried and Severson 234–235). Though livestock had been run by a number of populations on the lands of the American Southwest for many years prior to World War II, the postwar demands for increased grazing lands encouraged the Forest Service to start "carving up National Forest woodlands with bulldozers and chains, hoping to create greener pastures for white men's buffalo" (Lanner, *Piñon* 132).

Throughout the American Southwest, and the West as a whole, various thinning methods were and are used to "reduce the density of target species and promote changes in the composition of the existing community" in an effort to expand grazing lands (Monson 57). The most destructive of these methods is likely chaining, a practice in which a battleship anchor chain is stretched between two crawler tractors and dragged along the woodland floor, uprooting and pulling over any trees that lie in its way (see Figures. 4.1 and 4.2). These chains generally weigh between 40 and 160 pounds per link (the heavier the better for maximum "kill" effect), and range in length from 90 to 350 feet. They take a variety of forms, some smooth and some with steel bars or railroad rails welded to the links in order to more effectively "scarify" the soil surface in preparation for seeding. Chaining is most effective when the chain is left in a loose "J" or "U" shape, rather than stretched taut between the tractors, with the "kill and disturbance" ratings increasing inversely to the width of the "J" or "U". Often, the chains must be dragged

Figure 4.1. Chaining of pinyon-juniper woodlands in Utah's Dixie National Forest. Courtesy Special Collections, Sherratt Library, Southern Utah University.

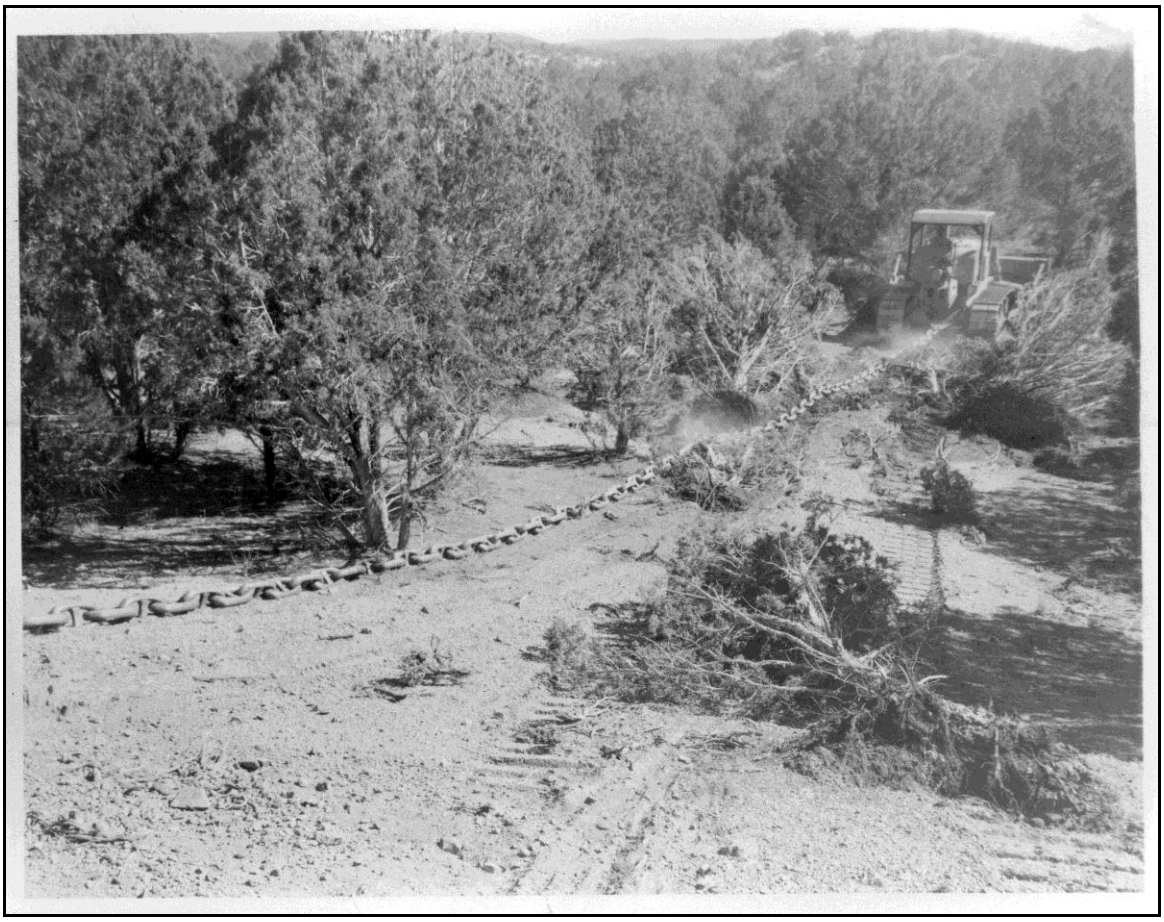

Figure 4.2. Chaining of pinyon-juniper woodlands in Utah's Dixie National Forest. Courtesy Special Collections, Sherratt Library, Southern Utah University.

across the land twice and in opposite directions in order to completely uproot trees and fully sever the tops from shrubs. The seeding of new forage species actually occurs between these two chainings, or before a single chaining, as the downed trees, shrubs, and bushes provide cover for the sprouting grasses (Stevens and Monsen 66–71).

An equally destructive manner of clearing has been termed by Lanner the "Tree Crusher" (*Piñon* 132). More properly known as a "Roller chopper," the equipment comprises a tractor or other large machine whose "wheels" consist of hollow steel drums fitted with grader blades and filled with upwards of 900 gallons of water. The chopper,

heavy with the weight of so much water, rolls along the woodland and simultaneously "tips over, uproots, chops up, and kills trees and shrubs" (Stevens and Monsen 83). Other mechanical or intentional thinning measures include bulldozing, burning, and individual tree-clearing (see Figure 4.3). It is estimated that the Forest Service and the Bureau of Land Management cleared and converted to pasture roughly 3.2 million acres of pinyon-juniper woodlands between 1950 and 1973 (Sharashkin and Gold 6).

Implications of the Resourcing of Natural Things

The physical and ecological implications of the resource-based management practices described above vary depending on which resource is given highest priority,

Figure 4.3 Bulldozing in pinyon-juniper ecosystem. Courtesy USDA Forest Service.

and the results can often be in contradiction with one another. For example, those agencies and individuals that believe that there is an "overabundance" of pinyon-juniper woodlands throughout the Southwest are likely to believe that "finding value in these undesirable trees will help it pay its [*sic*] way off the land" and that "every effort should be made to turn the problems of excess pinyon and juniper into positive assets," whether those assets take the form of firewood, composite boards, or pet bedding (Knaebe 165, 169). Those who value the pinyon-juniper woodlands for pasture and forage are likely able to reconcile more easily their desires with those who value them for timber. Those who advocate for management designed to increase pine nut harvests, on the other hand, are apt to be at odds with both, as these managers instead look for ways to "use piñon nuts as a product or reason to justify positive management of the woodlands" (Kline 3). In general, however, most forest managers and management agencies seem to work to implement practices designed to produce "more forest products of better quality" and from which "greater economic returns could be realized" (Jensen 234).

The "returns" that humans seek from not only the pinyon-juniper community but also the greater natural world in general are not always so tangible and concrete as board feet or nut yields. They can, instead, be based on aesthetic enjoyment, spiritual fulfillment, personal growth, or myriad other reasons. The common link between these various returns, theoretical and material, rests in the human tendency to fulfill various needs and wants through and with provisions from the natural world. Occasionally, this practice has led communities not only to draw from the world around them to meet their demands, but also to revision and re-create that same world as necessary in order to satisfy those needs.

For example, Roderick Nash describes the American Romanticism that developed and grew in the eighteenth and early nineteenth centuries. During this period, the (American) natural world transformed from a dangerous and desolate place to one unique and sublime, a place that "offered an escape from society but also was an ideal stage for the Romantic individual to exercise the cult that he frequently made of his own soul" (47). The natural world or, more specifically, the "wild" natural world, became "a spectacle to be looked at and enjoyed for its great beauty," and living more harmoniously and connected with the natural world was viewed as "the best antidote to the ills of an overly refined and civilized modern world" (Cronon, "Trouble" 75–76). At a time when industrialization and expanding urbanism were causing increasing feelings of discontent and disjuncture, the natural world thus became a source from which humans, primarily Euro-Americans, could not only extract mineral and material resources, but might also draw on those resources providing renewed senses of self-identification and personal contentment. Unsurprisingly, and as will be discussed later in the chapter, this romanticization extended not just to the natural world, but also to the purported "inhabitants" of the natural world, American Indians.

In 1966, George G. Fogg, then of the Stovall Museum of Science and History at the University of Oklahoma, wrote that "it may now be said that the association between man and the pinyon pines has been long and generally fruitful, but a strong doubt appears about the continuation of this relationship with the same balance that has existed in the past" (Fogg 105). Fogg was referring specifically to the experimental works at the time underway in Arizona in which tracts of pinyon pines were removed in order to increase water availability, and was implying more generally that the balance between man and

pinyons is in doubt because of the changing needs of man and the failure of pinyon pines to fulfill those new needs. Such human expectation for the nonhuman to be molded and transformed per capricious human desire seems to be an underlying tenet of many resource-based management practices and theories, whatever those approaches advocate or result in. The ecological damage resulting from the many various resource approaches, and the management practices they infer, differs a great deal. While some systems are clearly more impetuous and focused on the short-term, immediate gain, they and most all resource-based management practices, at least on a large scale, reveal a fundamental human attitude toward the natural world that necessitates the creation of a divide between the human and nonhuman worlds. It is only by establishing that division that humans can easily and without question capitalize so excessively on the diverse offerings of the nonhuman world. Though many will argue against such a claim, it seems that such a great fissure does not as frequently exist between human communities, and so dominant human communities are *somewhat* less frequently able or willing to exploit for their own gain other subordinate groups as they are the natural world. Such abuse of people, of course, has and continues to occur, and an example relating to the pinyon-juniper ecosystem will be explored in the forthcoming sections of this chapter.

Traditional Ecological Knowledge: The Resourcing of Ideas

In many ways, the Euro-American Romantic desire to "be closer to nature" has led to the commodification of things other than the product and experience resources described above. The knowledge that enables the use of those products and the attaining of those experiences has likewise been transformed into a resource of its own. In the

United States, that sort of traditional knowledge has long been associated with American Indians. The pervasive national tale of the benevolent American Indians showing the newly arrived and desperate pilgrims how to tap maple syrup and plant corn demonstrates how deeply engrained in American culture has become the idea that American Indians hold a special and unique knowledge system. The previous chapter described the ways in which such traditional knowledge has often been ignored, downplayed, or otherwise silenced by White, Western systems, but more recently, there has been a push by dominating communities to appropriate and utilize that knowledge for their own benefit.

Traditional Ecological Knowledge (TEK), considered a subset of the more broadly defined indigenous, local, or traditional knowledge, is described as a "local-level ecological knowledge. . . rooted in an intimate and long-term involvement in local ecosystems" and is the "cumulative and dynamic product of many generations of experience and practice" (Menzies and Butler 1). It is knowledge "embedded within a cultural context, expressed through language, ceremony, artifacts, cosmology, and social relationships" (Paci and Krebs 269). TEK is also commonly described as being an inherently more holistic, moral, and rooted system of knowing, and it is the combination of all these characteristics that make TEK stand in such stark contrast to contemporary management agencies and practices that are "relatively new, externally formulated, and rarely site-specific" (Menzies and Butler 2). (Of course, even these characteristics and attributes of TEK are problematic as they simplify, generalize, and universalize what in reality is the varied knowledge of highly disparate and unique indigenous communities and individuals.)

As common contemporary land, sea, and resource management practices are slowly revealed as both incredibly unsustainable and highly destructive, management agencies are beginning to look to TEK to find inspiration and techniques for alternative management approaches. As more previously unconceivable consequences of standard practices come to light, and as the "green" wave continues to expand, the demand for TEK will only grow larger and more immediate. Numerous agencies and individuals have already begun to proclaim that "the potential for the application of traditional environmental knowledge to the management of soils, crops, forests, water resources, wildlife and fisheries is, quite simply, vast" (Johannes 8). As the previous chapter discussed, however, while many of the harvest techniques that indigenous communities developed over time may have been considered sustainable by today's standards, they were just as likely to be short-term focused or ecologically damaging. And while the most conscientious of land managers will recognize that indigenous peoples, like all peoples, have treated and do treat the natural world with both complete respect and utter disregard, many times, the purported wisdom of TEK is accepted unconditionally.

Within the pinyon-juniper communities of the American Southwest, the manners in which various American Indian populations have and continue to interact with and utilize pinyon pines are often (though not always) promoted, particularly by land managers interested in expanding the harvest of pine nuts, as ideals or standards to be followed. The wide-ranging ways in which American Indian communities have utilized pinyon pines throughout their history—for everything from food, heat, and building supplies to medicine and crafts—are taken as evidence of the deep and intimate knowledge that they have of their surrounding environment. The presentation by Ellis

Tanner that was examined in the previous chapter also offers an illustration of the ways in which Euro-American conceptions of TEK can be created and the potential concerns that might develop as a result of that construction.

Tanner paints the Navajo people he is discussing as having the profound relationship with the natural world that TEK necessitates. They were, after all, familiar with the best storage conditions for pine nuts long before Euro-Americans learned such techniques in the middle of the twentieth century. Tanner emphasizes the traditional cultural beliefs of the Navajos, who hold that "everything that grows on the earth has a purpose" and that the pine nut was given to their people as a gift of food to "keep them going from generation to generation." "In the early days," Tanner says, Navajos would gather nuts for winter storage and for livestock feed. They have a "great respect for Mother Earth" and so they are unique in their ability to gather pine nuts with "respect and pride." Navajos alone are able to complete quickly and efficiently the hard work of pine nut gathering. All of this makes clear the long-standing cultural relationship that Navajos have with the pine nut and the pinyon-juniper ecosystem, and so correspondingly legitimizes, in Tanner's explanation, the harvest techniques they employ, as well as their very participation in the harvest.

Implications of the Resourcing of Knowledge

The incorporation of TEK into land management practices, and perhaps even into commercial enterprises like the harvesting of pine nuts, when done in order to protect ecological systems or increase sustainability appears largely unproblematic, even beneficial, at first glance. A deeper exploration, however, reveals the ways that such

appropriation of traditional and indigenous knowledge by a larger, dominant society acts as a form of cultural imperialism, a colonialist practice in which a larger, dominating, often external, society appropriates and manipulates the practices and traditions of another culture, generally to the detriment of the culture they appropriate. Indeed, some have argued that the tendency of land management agencies, researchers, scientists, and others to record and utilize TEK"—in the name of many laudable and progressive goals—tends less to promote indigenous conceptions of indigenous knowledge than to promote assumptions about how indigenous knowledge can be exploited by others" (Nugent 280). In the process, the needs and concerns of the traditional community in which the knowledge originated are forgotten, downgraded, or ignored, as "respect for cultural wealth is not always accompanied by respect for ethnic agency" (Ramos 251).

Tanner's presentation, again, demonstrates this underlying emphasis on the possibility for a dominant group to benefit from appropriating and utilizing the knowledge and skills of a subordinate group. He discusses, as mentioned, how the Navajo had long known how to store pine nuts for an extended period of time without them turning rancid. Once Euro-Americans discovered the same technique, quite possibly by watching or asking American Indians, the American Indian communities may have lost some control over the nut harvests they sold or traded to Euro-Americans as the buyers who previously were unable to store nuts successfully suddenly broke free of their dependence on American Indians for nuts in the offseason or during a poor crop year. The Navajo people, as well, "pick piñons better than any machine ever will," and Tanner estimates that they gather 90% of the commercial pine nut crop every year (30). The traders and buyers capitalize on the knowledge and skill it takes to gather pine nuts so

efficiently—skills only the Navajo seem to have—and transform it into profits for themselves by manipulating price controls and selling pine nuts to external markets at high markup.

Likewise, as many participants in cultural imperialism tend, intentionally or not, to do, Tanner presents his proposed changes to the pine nut industry as generous acts designed to help the Navajo people. He explains how a fixed base price of $2.00 per pound will benefit the Navajo picker: the picker will know that "his [*sic*] hard work will be rewarded fairly" and so "pride and dignity can be restored in his [*sic*] gift from Mother Earth" (31). The Navajo people as a whole will benefit from increased revenues from gathering nuts. This approach parallels what Buescher and Ono have described as "benevolent colonialism," in which colonial domination masks itself as a "necessary and benevolent force" that works to free, save, or empower a population or community, always through the imposition of the colonial power's ideology (132). "Think of the poverty on the Navajo Reservation," Tanner reminds his audience, and keep in mind that his solution will not only put more money in the pockets of the traders, but will be "good for everyone!" (32). The narrative of benevolent colonialism rests on the created belief that the colonized "ultimately need colonialism (to 'progress') and that, despite their uneducated opinions, native peoples deep down really do desire the superiority, control, reason, and order colonialism offers" (Buescher and Ono 131–32). Early in his speech, Tanner describes the "Navajo Shopping Center" his family established on the reservation and how, after the creation of that center, Navajos, instead of going to a trading post to barter and "point at what they wanted to buy," could sell their wares for cash and use it to

"shop like we do today in grocery stores," finally relinquishing themselves to the supposed superiority of the Western, White, capitalistic market system (29).

A more blatant example of colonial appropriation of traditional knowledge is found in the practices of bioprospecting (or biopiracy) that large, multinational corporations have undertaken in southern, tropical locations. In these situations, corporations seek the assistance and knowledge of traditional communities in order to locate plant chemicals and components that might lead to, for example, medical breakthroughs. Once those components are identified, however, the corporation is quick to file a patent, and almost always does so in a way that grants no royalties to the originators of the knowledge. The indigenous communities, who may have agreed to share their knowledge in exchange for financial assistance that never arrives, are left exploited and degraded.

It is difficult to know, of course, whether justly compensating an indigenous people for their knowledge is sufficient for ensuring that colonialist practices do not continue, or if even that monetary exchange in fact degrades the knowledge and subjects indigenous peoples to "the rapacious logic of the market" (Ramos 257). C.D. James Paci and Lisa Krebs have examined just this topic, questioning whether traditional or indigenous knowledge could ever become an avenue of resistance and a pathway to decolonization, or whether it is doomed to be consistently unethically appropriated and so become a tool of neocolonialism. They conclude that it appears that traditional knowledge can only be appropriately utilized in land and resource management practices when it invites not only the ideas but the people—and their values and beliefs—with whom the ideas originated into the process of management in a manner that will

"decenter the primacy of scientific and economic values in management decisions" (276). In such implementation, TEK can become a force for decolonization, rather than remain a form of neocolonialism.

What the complications surrounding the appropriation and utilization of traditional and indigenous knowledge ultimately rest on is the failure of those appropriating the knowledge to understand that indigenous knowledge is more than simply being able to recognize and utilize features of the surrounding environment. Traditional environmental knowledge, is, rather, "moored to worldviews and lifestyles so different from the Western mode as to be either undetectable or utterly baffling, and in any case, practically incompatible with the matter-of-fact, predatory vocation of industrial activities" (Ramos 257–258). Until those differing worldviews can be reconciled, it is unlikely that the appropriation and incorporation of traditional knowledge by a dominant society will be able to be anything other than an instance of neocolonialism.

Navajo Pickers and the Pine Nut Industry: The Resourcing of People

The transformation of things into resources perhaps becomes most controversial and troubling when those "things" consist of people. Scholars of cultural studies and anthropology have discussed some of the ways in which this resourcing of people occurs, and the instances most relevant to this discussion are those that connect, in some way, to the natural world as well. As was discussed before, for example, Euro-Americans of the eighteenth and early nineteenth centuries, and still today, tended to romanticize the natural world in order to appease their own feelings of discontent with and anxiety in

their surrounding industrial environment. Similarly, American Indians often became the symbol of the simplified and primitive past cultures that Euro-Americans so idealized out of belief that American Indians lived with deeper connection to the natural world. As Nash explains, the dominant culture of the American Romantic era believed that "man's happiness and well-being decreased in direct proportion to his degree of civilization" and so exalted "either contemporary cultures nearer to savagery or a previous age in which they believed all men led a simpler and better existence" (Nash 47).

In many ways, this primitivistic approach has enabled and encouraged some of the questionable practices in regards to indigenous or traditional knowledge that were discussed earlier. Because primitivism imagines that "things were more whole, more harmonious at some time 'before'," the primitive being—read, the American Indian—becomes somehow more authentic. The cultural practices and beliefs of American Indians, then, offer a path towards self-fulfillment for even non-Indians. In her extended analysis of the ways in which American Indians of the Southwest have been imagined and portrayed in fulfillment of primitive Euro-American desires, Leah Dilworth also explores the ways in which American Indians become inhibited in their personal, social, and economic development because of these Euro-American portrayals. For, though Euro-Americans were and are permitted to "play Indian" by appropriating American Indian practices and beliefs, American Indians, on the other hand, "could not 'play civilized' and still be 'Indians'" (164). American Indians were and are, in essence, expected to remain static despite overwhelming changes in the world around them, while still conforming to the needs and desires of the dominant and enveloping culture. Such a Euro-American attitude is often still present today, found in such situations as the lack of

traditional knowledge held by some individual American Indians or the decisions by some nations to permit on their land ecologically damaging practices like mining or nuclear waste storage. These communities are breaking from the perceived notion of what American Indians "should" be, and so provoke Euro-American confusion and possibly anger.

American Indians, and other indigenous populations around the world, have thus become resources that, like the natural world, dominating societies might use to alleviate their own personal and cultural ailments. Rather than focus on these more broadly defined and certainly fully explored conceptions of the resourcing of peoples through romanticism and primitivism, however, I return again to the presentation of Ellis Tanner in an effort to demonstrate a more localized and concrete way in which such resourcing or commodification of a people might play out. In contrast to the resourcing described above, in which people were materially utilized to provide an emotional or spiritual resource, Tanner's speech represents an instance when a people are discursively transformed into a resource and utilized not to provide abstract, intangible results, but rather material gains.

People into Pickers: A Case Study in the Resourcing of People

Throughout his presentation, Tanner works to legitimate the expansion of White, Western capitalism through the development and extension of the pine nut industry. Many of the techniques employed by Tanner in making his case center on utilizing colonialist rhetorical strategies designed to make imperative, unavoidable, or morally right his proposed actions. One of the unique strategies he utilizes is discursively

transforming a marginalized people, rather than an object or thing, into a "resource" that benefits a dominant society and perpetuates its colonizing ideology. The revelation of this resourcing of a people offers an example of a way in which scholars might work to expose, alleviate, and prevent the negative consequences of colonialism, and offers the general population a greater understanding of how the legacies of colonialism have become engrained within everyday discourse and thought.

Before Tanner even begins his presentation, previous speeches in the symposium have already prepared the audience to accept the importance of the pine nut as a marketable commodity exclusive to the southwestern United States. The management practices suggested throughout the symposium—those which entail managing the land in ways that will maximize pine nut production—are demonstrated to be the most responsible and logical of possible management systems. The practices are shown to be necessary in light of ecological science. Employees of the USDA Forest Service give estimates that almost 3.5 million acres of the Southwest's national forests featuring pinyon-juniper woodlands are in "impaired or unsatisfactory watershed condition" (Shaw 12). Revised management practices, which will work to create a "sustaining healthy ecosystem," could help improve the region's water quality and availability, biological diversity, organic soil content, riparian areas, and vegetative conditions (Henson 23). The proposed management practices are also discursively made imperative through the highlighting of market demand and competition for pine nuts, much of which was explained previously in this chapter, and which implies that the southwestern United States must increase and modernize its production of pine nuts in order to remain a market contender both internationally and domestically.

Additionally, other resource uses of the pinyon-juniper ecosystem are painted as backwards and reckless. The symposium presenters take care to distance themselves and their proposals from the "resource extraction and devastation" implicit in earlier uses of the ecosystem (Kline 4). Practices including fuel wood harvesting and livestock grazing are explained as destructive and irresponsible, whereas pine nut harvesting is acceptable, positive, and economical. The benefits of the pine nut industry—an industry "whose annual sales can easily exceed 100 million dollars throughout the region, and [which can] provide direct income to many rural residents and Native Americans"—are thus made universally appealing (Kline 8). A black-and-white choice between "management schemes that destroy resources, or that use them intelligently for our economic and social benefit" is presented, leaving no option for simply leaving the ecosystem unmanaged or combining management goals (Lanner, "Kind" 17). Such a one-or-the-other approach echoes Buescher and Ono's description of benevolent *versus* malevolent colonialism, in which one form of colonialism is proclaimed harmful so that an alternative form is more easily accepted by the colonized; thus, "while one form of colonialism makes no sense, the other form *does*" (139). The process also resonates with Burke's description of scapegoating, in which divisiveness is used as "a device that unifies all those who share the same enemy," the enemy, here, being all those who oppose the expansion of the pine nut industry (51).

The general symposium, then, sets up Tanner to continue the colonialist expansion of White, Western capitalism by reframing a people as a resource. In *The New Resource Wars*, a compilation of case studies documenting the struggle of native and indigenous populations to defend their rights and interests in the face of multinational

corporations, Al Gedicks describes resource colonialism as an "assault" perpetrated on native peoples because of the "wide variety of valuable resources needed for industrial development" that can be found on their lands (13). While Gedicks provides numerous examples and stories demonstrating the devastating cultural and environmental effects that resource extraction and capitalization projects like mining and logging have on indigenous populations, he fails to address the less obvious ways in which resource colonialism can be enacted. The discursive powers of resource colonialism can also be used to create alternative "resources" that legitimate the continuation of colonialist attitudes and practices by appealing to capitalistic norms. Resources are not limited to minerals and timbers; Merriam-Webster, in fact, defines "resource" in one way as simply "a natural source of wealth or revenue." Thus, anything "natural," including humans, that might provide this wealth or revenue can be approached as a "resource."

Throughout his presentation, Tanner participates in colonial behavior by discursively transforming a people—the Navajo—into a resource that will benefit a dominant White, Western society and ideology, but he must first employ numerous discursive practices in order to do so. Many of these, like marginalization, othering, and naming, were all discussed in detail in the previous chapter. Once Tanner's presentation succeeds in consistently transforming the Navajo from a people into an "other" and a "thing," he can then begin to convert that "other" into a resource. The profitability of the traders (including Tanner) and buyers of the pine nut industry clearly depends on the initial harvesting of the nuts, 90% of which Tanner estimates to be done by Navajos (30). Therefore, Tanner, who is president of the Piñon Nut Industry Trade Council, and other traders and buyers treat not only the pine nut, but also the people—the "pickers"—who

gather the nuts, as a resource and commodity. It is here where the value for Tanner and the pine nut industry of the renaming of the Navajo as "picker" becomes clear.

A "picker" is a noun, and while that noun could very well refer to a person, as it ostensibly does in this presentation, it could just as easily refer to a mechanical and automatic harvesting machine. The comparison of the Navajo to machinery is prevalent throughout the presentation. Tanner explains to the audience that the efficient and diligent "Navajos pick piñons better than any machine ever will," and that when harvests begin during years with projected high crop yields, "100,000 Navajo Indians get busy and start picking piñons to bring in to town to sell" (30). As the season progresses, however, and as large buyers drive down pine nut prices, fewer Navajos continue to pick, and "thousands and thousands of pounds of piñons rot under the trees" (31).

To prevent this waste, Tanner recommends that a base price of $2.00 per pound be guaranteed to the pickers so that the "Navajo piñon pickers will keep harvesting" (30). The Navajo machine, then, must be kept motivated for it to continue harvesting the resource that the traders and buyers want. If this proper care is not taken, the Navajo, like any other machine, will cease to operate properly and efficiently. Without this base price to "our Navajo commercial piñon pickers," says Tanner, "we can't harvest enough piñon nuts to make the market grow" (32). The Navajo, and only the Navajo, have already come to be equated with the pine nut industry's pickers and so the Navajo—as much as the pine nut itself—become a resource necessary for the growth and expansion of a dominant group's industry and economy. In many ways, this process parallels JanMohamed's description of the discursive "commodification" of a native subject into a "stereotyped object," a "generic being that can be exchanged for any other native" and so

more easily replaceable and exploitable (64). JanMohamed's commodified person, however, at least has the luxury of remaining a "being." Here, the very humanity of the Navajo is ignored and destroyed.

These Navajo pickers, these harvesting machines, even become possessions at times. Tanner, speaking on behalf of the pine nut industry, refers to the Navajo as "*our* main commercial piñon nut pickers" and "*our* Navajo piñon nut pickers" (30, 33; emphasis added). The Navajo, once again, are transformed from people into things, likened this time to mechanical harvesting equipment that is capable of being owned. The Navajo become a resource that provides profit to its owner, the pine nut industry. The colonial narratives—the domination of one people over another—that are implicit within this rhetorical move are troubling enough, but they become even more so when Tanner indicates the pine nut industry's hope that an actual mechanical picking machine will one day be developed (33). If the pine nut industry is viewed as owner and proprietor of the Navajo picking "machine," it becomes the industry's right to do what it wishes with that "machine" once it becomes outdated. The transformation of the Navajo people into "things" has already removed any of the industry's or region's humanitarian responsibility towards the Navajo, and so the likelihood during future harvests that Navajos who choose to gather may not only be cast aside in favor of a truly mechanical machine, but explicitly excluded from the harvest, is very real.

Additionally, Tanner's transformation of a people into a resource is only one of the tactics of discursive colonialism that he employs throughout his speech. The ultimate purpose of Tanner's presentation—to proffer a way in which the pine nut industry may be made more stable and profitable—reveals further the colonialist ideology to which he and

the pine nut industry subscribe. In his push to legitimate the expansion and growth of the pine nut industry, Tanner must also legitimate the hierarchy inherent within that industry. Power in this particular industry may be defined as the ability to manipulate and control the price of and demand for pine nuts. Tanner explains that the large nut companies, which he refers to as "buyers," have historically displayed the greatest power and success in manipulating pine nut prices because of their ability to wait-out traders as the season progresses, knowing that traders do not have the financial or technical ability to buy and stockpile large quantities of pine nuts for any great deal of time and will be forced to sell at lower prices. The middleman traders, in turn, have control over the prices that they pay the original harvesters of nuts. The control that pickers may exert over pricing lies in their purposeful refusal to gather when prices are unfairly low, which could shut down the industry as a whole, and at the very least threatens to decrease potential profits.

Tanner, however, recognizes this potential power of the pickers and works to subvert it by ensuring that his audience will not sympathize with the efforts of harvesters to assert their own power. Rather than describing the harvester's refusal to pick as an affirmation of rights, Tanner portrays it as "quitting." When low prices make it unprofitable to pick and sell nuts to traders, the harvesters only "pick enough piñons for [themselves] and quit" (31). Even those people who do continue harvesting despite the low prices waste valuable picking time by "running into town every day to sell his [*sic*] piñons" (31). The harvesting of pine nuts is quite time-sensitive, as birds and rodents caches massive amounts of nuts and as nuts that have fallen from the cones to the ground are quickly ruined by sun, rain, or snow, and so any time that is spent by the harvester selling, rather than gathering, nuts is portrayed as a selfish and greedy move to grab as

much profit as possible, rather than as a reasonable and responsible move to ensure that one's work is fairly compensated.

Tanner also rhetorically places some—though not all—of the blame for the failure of the pine nut industry to develop more quickly on the harvesters who choose not to pick when prices are low. In order for the pine nut industry to expand and grow, it must become more stable; to become more stable, in the years of bumper crop, the industry must "harvest as many of the nuts as possible to get us through the lean years" (30). Since 1956, Tanner says, "not one bumper crop has been harvested anywhere near to capacity" (30). Close to 10 million pounds of pine nuts from 1992's heavy crop, for example, were left on the ground because, as the price per pound fell, "fewer Navajos went out to pick" (30). Tanner portrays the wasted potential of these bumper crops as a tragedy, in much the same way that the general symposium attacks alternative resource use of the pinyon-juniper ecosystem for being irresponsible.

As Tanner reinforces the power hierarchy inherent within the pine nut industry, he correspondingly builds support for the cultural domination of the Navajo. As has been explained, Tanner uses interchangeably the terms "picker" and "Navajo." He describes the difficult process of harvesting pine nuts as being one that you cannot complete standing up or by reaching up to pick nuts off of the tree. Instead, you must "get down on your knees" and crawl along the ground to gather the nuts. The Navajo, he insinuates, are well suited to this position of subjection, as they pick "better than any machine" and "like no one else on the face of the earth" (30). In fact, Tanner assures his audience, the Navajo relish this subjugated status: they are always "excited to go out and bring in the piñon nuts," and they do so with "respect and pride" (31, 30).

The Western capitalistic market system, and all of the colonialist and dominating practices inherent within it, that Tanner advocates is nonetheless understood by Tanner and his audience to be the ideal toward which the pine nut industry should reach. As mentioned, throughout his presentation, Tanner laments the years where "thousands and thousands of pounds of piñons rot under the trees," when the pine nut industry is unable to capitalize on bumper crops (31). The monetary gain—which Tanner claims to be potentially $20 million dollars per year in good harvest years—provided by a stable and growing pine nut industry and foreshadowed by Tanner would be, of course, "good for everyone!" (32). The expansion of the empire of Western capitalism is portrayed as universally beneficial, and the discursive transformation of a people into a resource—and the colonial domination that accompanies that transformation—is correspondingly justified.

Resource-based approaches to the natural world, then, create divides and distinctions not only between the human and nonhuman worlds, but also potentially between different communities within the human world. People, knowledge, and the natural world and its objects are all abused and exploited equally in the realm of resource development and capitalist markets. Often, the deep relationships with the natural world that some communities, like American Indians, are perceived as maintaining can lead those communities to be even more consistently taken advantage of by dominant societies as human and nonhuman become interchangeable resources.

The transformation of the pine nut, the pinyon-juniper ecosystems, and a people into a commodity marks the creation of yet another narrative of the pinyon-juniper ecosystem. This new story raises concerns over the way the human-nature relationship

will manifest itself in response. There is great danger in the assigning of monetary value to a place and thing, particularly when that valuation risks the possibility that the cultural and traditional values of the pinyon-juniper ecosystem and the pine nut might be forgotten or intentionally ignored. Those people who depend on or relate to the pine nut or other aspects of the natural world around them are at risk of having their own resource base stripped away, or, even worse, of being labeled as resources themselves. Such commodification begs the question of how humans might maintain or develop positive human-nature and human-human relationships in light of the ever-expanding reach of capitalism and its monetizing tendencies. At heart, much like in the scientific story explored earlier, the resource story quickly returns to the question of intrinsic value and instrumental value. While the resource value of a thing such as a pinyon pine or a pine nut is often undeniable and, perhaps, even appropriate and beneficial at times, the determination of worth solely by instrumentalism risks overuse, exploitation, destruction, and mistreatment in any number of ways. Such actions are more easily justified precisely because the narrative of instrumentalism allows the creation of space between the human and the nonhuman. Any sense of responsibility toward the nonhuman or alternative human worlds that might be derived from scientific, cultural, and moral realms is easily washed away in the waves of instrumentalism and commodification.

CHAPTER FIVE

TOWARD A NEW STORY

In mid-October of 2009, I spent a weekend gathering pine nuts with some friends in western Utah and Eastern Nevada. We headed west from Salt Lake City, turned south at Wendover, and drove until we had penetrated a deep valley and the car could no longer handle the deep ruts and bumps of the dirt road. Mountains rose on either side of the valley as we assembled our collection buckets and water bottles. The road had barely climbed off the valley floor and so we would be hiking from the sage-covered meadow up and into the woodlands above us. Once there, we found a tree cover dense enough to keep a few brief rains from getting us too wet, but sparse enough to allow us to walk easily between the pinyons, junipers, and cedars.

We were picking late in the season. The nuts within the cones had first ripened nearly six weeks earlier, so by the time we went to gather, many of the cones had already dried out and opened. The woodland floors were littered with cones in varying hues of green and brown and nuts in their chocolate-brown shells. Our harvest strategy was less than scientific: pick the nuts off of the ground. Other than distinguishing by color between good nuts and those that had been aborted or gone rancid, the picking itself was not too difficult. Just time-consuming, perhaps a bit tedious, and definitely work that puts a hunch in your back from bending over. The dried needles of the singleleaf pinyons, too,

were a bit of a hassle. Brittle and sharp, the needles dug into your fingers and hands as you gathered. The sticky, fragrant pitch of the pinyon cones was less of a concern, if you could avoid the temptation of trying to work nuts out of green cones that had not fully dried. Elk and deer droppings were nearly as prolific as the fallen nuts, and so you eventually grew used to simply picking around them. My friends found what they thought might be the caches of squirrels or birds, and happily pilfered the little stores. We spent only a few hours over two afternoons gathering, and returned to Salt Lake with many pounds of nuts each, hiding them away ourselves in cloth bags and basements to share with friends and family over the next few months. Haniel Long described a similar experience better than I: "The piñon crop, being a free gift of God and an occasion for families to go into the country together in the perfect weather (for October in the Southwest is a dream), fills thousands of people with memories that make life good and worth living, not just endurable. It is a special and dear experience" (Long 27). Harvesting pine nuts was, indeed, a unique experience for me, and one that encouraged and stimulated this project.

When I initially began this work, I planned on focusing exclusively on the pine nut and the relationships that have been and are developed with it. As I worked, however, I quickly came to realize that such a division was impossible. The pine nut cannot be extracted and analyzed separately from the pinyon-juniper ecosystem in which it is found any more fairly or ethically than the nut or the ecosystem could be examined from a point of view based only on science or culture or resources, or the human world considered separately and apart from the nonhuman world. In retrospect, I should be somewhat surprised, and maybe even a bit embarrassed, that I was so quick to try to create such

divisions. Most everything I have just written emphasizes, after all, just how important the relationships between and within human and nonhuman communities are. My own experiences should have made that reality even more obvious to me as I am not able to roast and consume a batch of nuts without recalling the prick of pinyon needles in my cuticles, the pitch that covered my fingers and remains on my jeans still, the elk bugles that sounded along the valley as we gathered. In writing so exclusively on the pine nut, I had, initially, been a participant in the very narrative systems against which I was speaking, systems that encourage or demand division, partition, and distance.

The approaches to the pinyon-juniper ecosystem that were examined in the previous chapters were likewise incomplete. Each approach reveals both positive and negative aspects when it comes to the human actions that its corresponding narrative encourages. The negative features have been examined thoroughly enough, but the positives might deserve a little more recognition. The scientific story offers forth an incredible amount of knowledge that humans can use to better understand and appreciate the world around us, our place in that world, and how we might protect it. Different cultural stories might encourage new ways of viewing the human relationship with the nonhuman, perhaps resulting in benefits for both. Even the resource story, as destructive as it can sometimes be, also has the potential to help humans recognize the value to be found in the nonhuman world, and so learn also to realize our own dependence on that world. When I say that the examinations of those narratives are incomplete, then, I do not mean that they are incomplete in what they produced. They are, rather, incomplete because they were each conducted singularly and in isolation. The interplay between each story and the ways in which the varied manifestations of the stories have affected each

other were left largely unconsidered. Such influence may be obvious, or it may be subtle, but there is little denying that there is such interaction, that all of these stories melt and bleed into one another in such a way that they, really, can become somewhat indistinguishable.

What is needed, then, is recognition and incorporation of these blended stories. The human world, if we wish to realize our role within the larger natural world in a way that is sustainable, healthy, enjoyable, and rewarding, must look to a more encompassing narrative, one that incorporates and embraces the best of the scientific, cultural, and resource stories while still paying heed to the inherent worth of the natural world outside of those particular realms. This new story can be one that enables the rebuilding of the relationship between the human and the nonhuman, while simultaneously allowing, even encouraging, the uniqueness of humans.

The pinyon-juniper ecosystem offers an example of a place through which just such a relationship might be formed, despite the potential dangers of some of the narratives that do exist regarding the woodlands. It can be a place where humans meet with the nonhuman to the benefit of both. The myriad values that humans do place on the pinyon-juniper community and its many offerings can, if humans choose to act morally, responsibly, and inclusively, become avenues for simultaneous increases in economic productivity, cultural expression, and environmental protection. Such interactions could also provide the starting point for a new human-nature relationship, one which recognizes the interdependence of the human and nonhuman worlds, and one in which the distinctions between economics, culture, and the environment begin to become less clear.

A Story of Potential: Human-Nature Ecotones

Such areas, such places where the human and the nonhuman meet and interact, are well described by writer and farmer Wendell Berry. For Berry, humans and nature must and should interact, the only dangerous aspect of such interaction being the degree to which humans are capable of manipulating the nonhuman world. Those conflicts of interest that do arise—between a sheep farmer and a coyote, a gardener and a weed—offer not "the possibility of victory so much as [they suggest] the possibility of a compromise—some kind of peace, even an alliance, between the domestic and the wild" (11). Berry encourages the searching out of margins, of places where humans and nonhumans, nature and culture, domestic and wild, may meet and intermingle, mixing with each other to produce something new. Philosopher Anthony Weston makes a similar appeal when he writes on the shape such a new approach may take:

> Nonetheless, [this version of ethics] does redirect our main focus toward the points of interaction, encounter, rather than separation. Certainly the aim is not to push humans out of the picture entirely, but rather to open up the possibility of relation between humans and the rest of Nature. We need to pay much more attention to places where humans and other creatures, honoured in their wildness and potential relatedness, can come together, perhaps warily but at least openly. (n.p.)

The field of ecology has another phrase for such meeting points: ecotones. Areas of transition between two distinct ecosystems, ecotones are a metaphor more fitting to the narrative of human and nature reconciliation than that of "margin." Margins connote the outskirts, the forgotten, the unloved. Ecotones are places of abundance and health. They feature characteristics of both ecosystems, blending the two together to become an area that is richer and more diverse than either can be alone. They are places of possibility,

where the spontaneity of wildness and the comfort of domesticity can express themselves anew through the melting together of two into one.

What might a human-nature ecotone look like? Perhaps like the pinyon-juniper ecosystem, where the harvester of pine nuts advocates for the protection of the woodlands from denuding by bulldozers and chainsaws, all the while maintaining cultural traditions and earning a living. The pinyon-juniper ecosystem can be simultaneously wild and cultivated. Maintaining these ecosystems as they are, in fact, increases the benefits that humans might gain through gathering of nuts as the continuation of the forests depends on the spreading and "planting" of the nuts by wildlife like pinyon jays. Humans not only have access to a valuable item, but the very interaction with the wild world that provides that item may allow for humanity to begin to reconsider our role within the larger natural world.

It might, here, be necessary to return to the discussion of intrinsic and instrumental values that was briefly undertaken in previous chapters. A human-nature ecotone could allow for the possibility of acknowledging and respecting both the inherent and the instrumental values of the nonhuman worlds. Instrumental value gets a bad rap, often deservedly so. Chapter Four demonstrates how easily instrumentalism can slip into exploitation and presents the catastrophe that can result from such movement. But the tendency for humans and nonhuman creatures alike to make use of the environment surrounding them is not, in and of itself, a bad thing. It is often necessary, in fact, as much for humans as for all other living beings. Humans do, however, have a unique ability to overdo that utilization, or to do so at the expense of other creatures and things, or for trivial, excessive, or greedy reasons. Encouraging a human attitude that fosters a

respectful, gracious, and limited instrumental association with the natural world has the potential to enable humans to have a deeper and more intimate relationship with the natural world than does an attitude that removes humans from their place in the natural world or that writes off as harmful any effect that humans might have on the world around them.

Author, ethnobiologist, and natural historian Gary Paul Nabhan provides a compelling illustration of human instrumentalism that is far from damaging to the nonhuman world. In *The Desert Smells Like Rain*, a narrative of the Tohono O'odham, or Papago, people of the Sonoran Desert of southern Arizona, Nabhan tells the story of two oases in the desert, *A'al Waipia* and *Ki:towak*. *Ki:towak* is an inhabited oasis and the Tohono O'odham who live there manipulate the land to better serve their needs, consistently plowing, irrigating, removing debris from streamlets, and planting willows along stream banks. The list of the plants that the inhabitants of this desert oasis cultivate and of what grows unheeded in the wake of such development is impressive: squash, watermelon, beans, wild greens, medicinal plants, willows, elderberries, salt cedars, dates, wolfberries, mesquite, figs, and pomegranates, to name just a few. Dozens of species of migratory, vagrant, and resident birds visit *Ki:towak* to rest, water, and feast on the many plants. The human and the nonhuman, together, thrive under the human maintenance and interference in the oasis, or, in truth, *because of* such maintenance and interference.

Only thirty miles north of *Ki:towak* lies another oasis, *A'al Waipia*, now incorporated into Organ Pipe Cactus National Monument. *A'al Waipia*, too, was once inhabited and manipulated in the same way as *Ki:towak*. Archaeological evidence

suggests that the oasis was inhabited continuously since prehistoric man first arrived in the region. That is, the oasis was inhabited until the national monument was established in 1937 and the final grandfathered inhabitant passed away in 1945. By 1962, the National Park Service had destroyed or removed nearly all evidence that there had once been humans living in *A'al Waipia* in an effort to create a bird sanctuary that would attract tourists and demonstrate the abundance of life that a small water source in the desert could generate. But, as Nabhan writes, "an odd thing is happening at their 'natural' bird sanctuary" (*Desert* 96). Without the influence of humans, without some person there to prevent the irrigation ditches from silting up or to disturb the soil with a plow and catalyze the growth of new annual plants, the oasis is becoming less: less biodiverse, less busy, less beautiful, less alive. It is in the place where the human and the nonhuman meet, rather than in the place where the human has been excluded, that life has become most bountiful.

Berry relates a similar story when he tells of a red-tailed hawk that followed him unconcernedly as he mowed a pasture nestled between two stands of trees. The hawk seemed drawn to that margin of the cultivated and the wild, where it might access both (human-made) open meadows for hunting and ("natural") covered woods for protection. Such an event occurred in part due to the "phenomenon of edge or margin that we know to be one of the powerful attractions of a diversified landscape, both to wildlife and to humans" (13). Other such ecotones, such meeting places between the domestic and the wild, might include the farmers or gardeners who cultivate the land in ways that provide subsistence and also ensure, even improve, the land's vitality. They could be found with the hunter who maintains a pond along the migration path of geese, the fisherman who

stops a riverbank from washing downstream, the gatherer of wild mushrooms who carries her find in a mesh bag so as to spread the spores throughout the forest. These and many other relationships between the human and the nonhuman reveal that human interaction with the natural world does not always have to result in destruction or degradation of the natural world, even if that interaction includes the human side assigning value to particular aspects of the natural world. The black-and-white lines between that which is natural, wild, and pure and that which is not become blurred in these narratives. And though it may indeed at times be true, according to Thoreau's now famous adage, that "in wildness is the preservation of the world," it might equally be true, as Berry, again, suggests, that "so long at least as humans are in the world, in human culture is the preservation of wildness" (11). The nonhuman saves the human, and the human saves the nonhuman, the larger world being better for the continuation of both.

The Role of Community in the Human-Nature Relationship

Central to this new narrative of a human-nature ecotone is a rethinking of the concept of community and the ways in which humans have traditionally defined and outlined communities. For some, humans and nonhumans share a community, for others they do not. The latter, I believe, is presently the more common belief, and that sense of disconnect between the human and the nonhuman worlds is one of the reasons why environmental damage is so prevalent and continuing to increase. "Community" implies a shared responsibility and commitment, and when a person or thing lies outside of one's community, that accountability is lost. And while such separatist narratives do not always result in the destruction of the natural world, they nevertheless advocate a human view of

nature as elsewhere, as a place "where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain," as the 1964 Wilderness Act proclaims. Humans, by this definition, do not belong in "wilderness," nor are they members of the earth's "community of life."

There are, however, a growing number of narratives that recognize the importance of community and that work to redefine the presently distinct human and nonhuman communities as being one and the same. Aldo Leopold's famous land ethic "enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land" (204). Laurie Anne Whitt and Jennifer Daryl Slack echo this sentiment, advancing a broad and inclusive view in which "communities can be understood as sites where the human and other than human are drawn together in multiple articulations" to such a degree that "community and environment constitute a single, integral and open system; they are mutually responsive to, reciprocally constructed and informed by, one another" (21, 24–25).

In her description of the conflict between the environmental movement and the environmental justice movement, Giovanna Di Chiro describes how certain human populations have defined nature in such a way that it is "tied closely to ideas of community, history, ethnic identity, and cultural survival, which include relationships to the land that express particular ways of life. The place—geographic, cultural, and emotional—where humans and environment converge is embodied in the ideas and practices of 'community'" (318). The environment, the natural world, is seen not as a place where humans either do not belong or to where they might go to escape the stresses of civilized, city life, but as "the place where family and community convene and share

life experiences" and so "communities and environments are therefore conjoined and must be understood as being mutually constitutive" (299, 318). Nature, by these definitions, *is* community, and community is nature.

Within such a community, in a human-nature ecotone, the human and the nonhuman meet and combine in ways that benefit and enhance both. Those meetings provide an avenue for narratives that may be shared—orally, literally, between mothers, fathers, sons, daughters, friends, neighbors—and that have the power to affect the way that we view the worlds, creatures, and peoples around us. Whether we choose to tell a story of division or a story of community matters, as every story we tell and how we tell them results in something different. Native author Thomas King emphasizes the power of story by explaining that "a story told one way could cure" and "the same story told another way could injure" (92). The stories we tell, environmental historian William Cronon writes, "like the questions we ask, are all finally about value," and so we must consider what stories we tell, and what values they hold inherent within ("Place" 1376). In reality, King explains, "the truth about stories is that's all we are" (2). Some of our stories have failed us, as humans and as citizens of the earthly community, and so we must learn to tell something new. Perhaps that new narrative could be like that possible in the pinyon-juniper ecosystem and could include the story of a human-nature ecotone, where the divides between the human and nonhuman worlds disappear, revealing a place that is at once cultural and natural, wild and domestic, human and more than human.

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